Farm Life on the Appoquinimink, 1750-1830
Archaeological Discoveries at the McKean/Cochran Farm Site
Odessa, New Castle County

By

John Bedell, Ingrid Wuebber, Meta Janowitz,
Marie-Lorraine Pipes, Sharla Azizi, and Charles H. LeeDecker

THE CULTURAL RESOURCE GROUP
LOUIS BERGER & ASSOCIATES, INC.
East Orange, New Jersey

Delaware Department of Transportation Series No. 156

Eugene E. Abbott
Director of Planning

Delaware
Department of Transportation

1999

U.S. Department of Transportation
Federal Highway Administration

PLATE 1: Field Crew
Front Row, Left to Right: Earl Proper, Rob Shaw, Chris Marshall, Joelle Browning, Paul Stansfield, Dave Gilmour
Back Row, Left to Right: Jeff Rog, Diane Rog, Meg Nash, Jim Skocik, Andrea DeNight, Whitney Kirk, Kimber Budrow, Bruce Bourcy

FRONT COVER: Handpainted Pearlware Teawares from the Later Cellar, 1800-1830

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The Cultural Resource Group
LOUIS BERGER & ASSOCIATES, INC.
100 Halsted Street
East Orange, New Jersey 07019

Submitted To

U.S. DEPARTMENT OF TRANSPORTATION
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✦

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Director of Planning

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ABSTRACT

They say the dead tell no tales, but if we know how to listen, the houses they lived in, the tools they used, the dishes they ate from, and the trash they left behind can tell us fascinating stories about the men and women of centuries ago and the world they lived in. On behalf of the Delaware Department of Transportation (DelDOT), archaeologists from the Cultural Resource Group of Louis Berger & Associates, Inc. (LBA), have conducted intensive, Phase III archaeological studies at the McKean/Cochran Farm Site. The site, which was located on the Appoquinimink River just west of Odessa, Delaware, in southern New Castle County, will be destroyed during the construction of State Route 1. Excavation of the farm uncovered two sequential sets of buildings, the first dating to about 1750 to 1800 and the second to about 1800 to 1830. The structures uncovered include two houses, two post barns, two wells, and a dairy. The building foundations were well preserved and provided a great deal of information about the structures on the site, including a house with complex stone foundations and a very unusual dairy, built in the form of a springhouse on a site with no spring. More than 38,000 artifacts and animal bones were recovered during the excavations, including particularly rich collections of ceramics and animal bone. The buildings and the artifacts show that the residents were part of the Delaware Valley culture, which can be distinguished in many ways from the culture of the nearby Chesapeake region. Since southern New Castle County physically resembles the Chesapeake region much more than it does the hilly lands of northern Delaware and southeastern Pennsylvania, it seems that the residents of the McKean/Cochran Farm were more interested in maintaining the culture they brought with them from the Old World than adapting themselves to the New World environment in which they lived.

ACKNOWLEDGMENTS

The Cultural Resource Group of Louis Berger & Associates, Inc., wishes to express thanks to the many people who provided guidance, advice, and assistance at various stages of the project. The Delaware State Historic Preservation Office provided an important oversight role and responded quickly to all requests for consultation and guidance. We wish especially to thank Daniel R. Griffith, Director and State Historic Preservation Officer; Gwen Davis and Alice Guerrant, Archaeologists; and Joan N. Larrivee, Deputy State Historic Preservation Officer. Important assistance was also provided by Charles Fithian, Curator of the Delaware State Museum, and the staffs of the Delaware Bureau of Archives and Records at the Hall of Records in Dover, the Odessa Public Library, and the Library of Congress in Washington. Data for comparisons with other sites were provided by William Kelso, Fraser Neiman, and Julia King.

The many individuals at the Delaware Department of Transportation who provided important assistance included Kevin Cunningham, Archaeologist; Ann Canby, Secretary; Raymond Harbeson, Chief Engineer; Eugene Abbott, Director, Planning; Joseph T. Wutka, Jr., Assistant Director, Planning; Therese M. Fulmer, Manager, Environmental Studies; Loretta Brisbane, Secretary; Anna May Decker, Project Scheduling and Support; Tim O'Brien, Photographer; Dave DuPlessis, Project Engineer; and Danny Skeens and Ira White, Property Management. Production help came from the Division of Support Operations, including Bill Yerkes, Graphics and Printing Manager; Kate David, Graphics Specialist III; Robert J. Zullo, Graphics Specialist II; Justina Brewington, Photo Reproduction Technician; Jim Sylvester, Printer III; and Ed Wilkinson, Printer III. We also wish to thank Tommy Beatty, Division Administrator, and Robert Kleinburd, Environmental Officer, both of the Federal Highway Administration, and Foster Hoffman of Century Engineering.

We wish to thank the members of the press who helped us publicize our work at the site, especially Phil Milford of the *Wilmington News Journal* and Alicia Moticha of the *Middletown Transcript.* The owner of the property, Anthony Fusco, and the farmer, Lawrence Jester, were both very helpful, and we wish to thank them for their cooperation.

The Cultural Resource Group of LBA had direct responsibility for the study. The LBA staff was under the overall direction of John A. Hotopp, Group Vice President. Charles H. LeeDecker served as Project Manager. John Bedell was the Principal Investigator. Historical research was carried out by Ingrid Wuebber, Leslie Frucht, and John Bedell. Robert Jacoby served as Field Supervisor and Earl Proper as Crew Chief. The field crew consisted of Lisa Adams, Bruce Bourcy, Theresa Brannon, Joelle Browning, Kimber Budrow, Robert Clarke, Andrea Denight, Kevin Fitzpatrick, Rowan Flad, Amy Freyburger, David Gilmour, Scott Jones, Finula McCaul, Glen Mellin, Kimberly Pokorosky, James Quinn, Christy Roper Morganstein, Laurie Rudder, Robert Shaw, Jason Shields, Catherine Skocik, James Skocik, Paul Stansfield, Rebecca Sterling, Jane Taylor, Douglas Tilley, Caroline Van Dyke, and Lee Weber. Laboratory supervision was provided by Sharla Azizi. Analysis of the artifacts was carried out by Meta Janowitz, Mallory Gordon, Christy Roper Morganstein, Gerard Scharfenberger, and Byron Simmons.

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I. INTRODUCTION

A. PRELIMINARIES

The McKean/Cochran Farm was discovered in late November 1994. We had arrived in the small historic town of Odessa the week before to carry out an archaeological survey of the route of a new highway, known as SR 1, that will carry traffic from Wilmington and I-95 to the Delaware beaches. The site was discovered one morning while we were investigating a large property on the north bank of the Appoquinimink River. At Odessa, the Appoquinimink River is a tidal creek lined with marshes. The river is now a recreational site for fishermen and boaters, but to Indians it had been a rich source of vital food, and in colonial times it was a highway to the sea. Despite the cold wind blowing off the river, we started our work that morning with high hopes. Amateur collectors had already found Indian spearpoints and arrowpoints on this spot, and it also seemed a likely setting for a colonial farm—perhaps even a Dutch farm dating to the earliest European settlement of the Appoquinimink River Valley (Plate 2).

PLATE 2: McKean/Cochran Farm Site from the Air

Soybeans had been cut from the property only a few weeks before our visit, leaving the ground covered with a thick brown mat of leaves and stems. We were laying out a grid of pink pin flags across the highway corridor, each flag marking a spot where our crew would dig a shovel test pit, working our way up the hill away from the river. We were using the metric system for our measurements, and the flags were spaced 20 meters, or

about 65 feet, apart. About a hundred yards from the riverbank we saw the first artifact through the soybean leaves. When we had picked it up and examined it, we saw that it was a sherd of coarse red earthenware.

By itself, a single sherd of coarse red-bodied earthenware is almost meaningless. This material was used by European settlers when they first arrived in the New World, and it continues to be made up to the present. Red-bodied earthenware (redware) was so common during much of that long period that it can be found almost anywhere, sometimes hundreds of yards from a house or farm. But the single sherd was enough to start us looking more closely, and as we worked our way to the crest of the hill more objects were to be seen. At first there was only more of the red earthenware, enough to tell us that at one time there had been a farm nearby, but still useless for figuring out when the farm had been occupied, or by whom. The first good clue found was a sherd of what we call "refined earthenware," a white-bodied ceramic used to make plates and teacups. From the way the sherd was broken, and the faint bluish tint to the white glaze, we identified it as pearlware. Pearlware, an English imitation of Chinese porcelain, was one of the products that made Josiah Wedgwood famous. It was first produced in about 1775 and was very common until about 1830. We found another sherd of pearlware nearby, and also a piece of green wine bottle glass. When we reached the top of the long slope from the river and stood on level ground, we found many more objects.

Red brick seemed to be everywhere, in pieces as large as half a brick, and ceramics were scattered all around. We also found half of a wine bottle base, often a good indicator of date because the shapes of bottles changed so rapidly in the eighteenth century. This bottle fragment, like the other objects, appeared to date to about 1800. Although we had not yet heard of Letitia McKean or Robert Cochran, we had found their farm.

Archaeological sites are documents. Like the paper documents preserved in archives and museums, they preserve information about the past. If archaeological sites are destroyed without proper excavation, the information they have to offer is lost forever. Not so very long ago, when the country was younger and impatient to grow, few people paid attention to the loss of historical archaeological sites. There were colonial houses everywhere, so there seemed little reason to worry about preserving them. In the past 50 years, as the pace of development has quickened and the supply of historic sites has shrunk, attitudes have changed. It is now the policy of the federal government, and the state of Delaware, to preserve historic sites when possible, and to properly excavate those sites that must be destroyed. To prevent the construction of SR 1 from causing more losses of our past, the Delaware Department of Transportation (DelDOT) has conducted archaeological survey, testing, and excavation all along the route of the 50-mile highway. In the 10-mile segment from Scott Run near the Chesapeake and Delaware Canal to Pine Tree Corners, including the area around Odessa, this archaeological work has been carried out by the Cultural Resource Group of Louis Berger & Associates, Inc. (Berger).

The archaeological program on a major project like SR 1 is usually divided into three stages. The first stage is survey, which involves looking for sites, and is usually called Phase I. Any sites that are thought likely to be important are then evaluated in a second stage, known as Phase II. Sites

judged to be important records of the past are either avoided by the planned project, if that is possible, or excavated. Thorough excavation of a site is known as data recovery, or Phase III. During the survey of the 10 miles of SR 1 recently studied by Berger, 21 archaeological sites were found, 12 were evaluated at the Phase II level, and six were judged sufficiently important to merit extensive excavation (Bedell et al. 1997).

The location of the McKean/Cochran Farm was within a large prehistoric site called the Appoquinimink North Site, assigned the Delaware state site number 7NC-F-13. The evaluation, or Phase II study, of the Appoquinimink North Site was carried out in April 1995, during the warm spring that preceded a hot, dry summer. We dug more than a hundred additional shovel test pits, and 39 square test units, measuring 1 meter (just over 3 feet) on a side. We found several spearheads and other stone tools, but all were recovered from the plowzone, the soil that had been repeatedly disturbed by the plow. These artifacts were left by prehistoric hunters and gatherers as they camped along the river, probably at various times over the past 5,000 years. We found no prehistoric "features," pits dug into the soil below the plowzone. We also knew that artifacts had been collected from this site many times by amateur archaeologists and that what we found might not be typical of what had once been in the ground. We therefore decided that the prehistoric site was not worth excavating intensely.

Our finds on the historic farm site were more exciting. One of the shovel tests was excavated directly over a historic feature so deep that we never reached the bottom at this preliminary stage; we now know that this feature was the cellar of a house built around 1800 (Plate 3). We found another feature nearby, and many hundreds of artifacts from the period 1770 to 1830. After consulting with DelDOT and the Delaware State Historic Preservation Office (SHPO) (the state agency charged with overseeing archaeology in Delaware), we agreed that the site had enough to tell us about the past to merit excavation. The features and artifacts on the site could help us understand how the people of Delaware lived in the time of the American Revolution and during the early Republic—what kinds of houses they lived in, what they ate, what they wore, what kinds of dishes they used at dinner, and what kinds of decorations they had in their homes. These basic questions about how people lived in the past are fundamental to our understanding of American history and how we think about our ancestors, and, indeed, how we see ourselves.

This report describes the excavations of the McKean/Cochran Farm Site and explains what we learned from the excavations and the analysis of the finds. It is intended to be interesting to nonspecialists as well as to other archaeologists and historians. The report has been organized so that the most technical material, likely to be of use mainly to other professionals, is presented in appendices or discrete sections; other readers can skip this material if they wish. Students and other nonspecialists are especially invited to read the site history (Chapter II), the description of the archaeological features (Chapter IV), and the conclusions (Chapter VII).

The most important discoveries at the site were the foundations of several buildings, large numbers of artifacts, and large numbers of well-preserved animal and fish bones. Through the study of these discoveries we have been able to reconstruct the history of the farm, and we have learned about the

PLATE 3: Excavating Feature 1, the Later Cellar, 1800-1830

PLATE 4: Sixth-Grade Students Excavating Feature 58, a Pit, with Help from the Crew

residents' diet, clothing, and housing, about their responses to economic and social change, and about the ways they adapted their European culture to their New World environment.

This report is not the only means we have used to try to communicate the findings of our work at the McKean/Cochran Farm. While the excavations were underway, reports on our progress appeared in local and statewide newspapers. We have reported our results to local archaeological societies in New Castle and Kent counties and to the Society for Historical Archaeology. One of our most exciting efforts involved hosting classes of elementary school students, who came to the site for a day to dig with us (Plates 4 and 5). They seemed to love the digging, and we enjoyed having them.

PLATE 5: Sixth-Grade Students Excavating Feature 55, a Pit

It is common practice among North American archaeologists to excavate prehistoric sites using the metric system of measurement and historic sites using the English system. Prehistorians prefer the metric system because it makes their work comparable to work on similar sites around the world, while historians tend to use the English system because it was used by the people whose remains they are digging up. (It is important to know if two eighteenth-century postholes are exactly 10 feet apart, but it hardly matters if they are exactly 5 meters apart.) The Appoquinimink North Site was the location of both prehistoric and historic occupations. Work at the site was therefore begun using the metric system. By the time it was known that only the historic component of the site would be excavated, the site grid had already been established using the metric system. Metric measurements were therefore used during the excavations. Because the site is historic, the artifacts found are described in English measurements. Rather than convert the measurements of the excavation units to odd English figures, the metric measurements have been retained. One meter is approximately 3.28 feet.

B. ENVIRONMENTAL SETTING

The Appoquinimink North Site and the McKean/Cochran Farm were located in southern New Castle County, Delaware. This area is within the Delaware Coastal Plain, a region of nearly flat land cut by occasional tidal creeks (Figures 1 and 2). The site was situated on a well-drained, gently sloping hill, the crest of which was approximately 100 yards from the bank of the tidal Appoquinimink River. The historic component of the site, the McKean/Cochran Farm, was located on the crest of

the hill. East of the site was a ravine that extended north from the river for a distance of about 1,000 yards. The southern end of the ravine contained tidal marshes that merged with those on the river, while the northern part held an intermittent stream. The soil on the site was Sassafras Sandy Loam, a type well suited for agriculture (Mathews and Lavoie 1970), and the current farmer, Larry Jester, told Berger personnel that the spot is extremely fertile. The site was approximately 1,500 yards southwest of Odessa and about the same distance from Middletown Road.

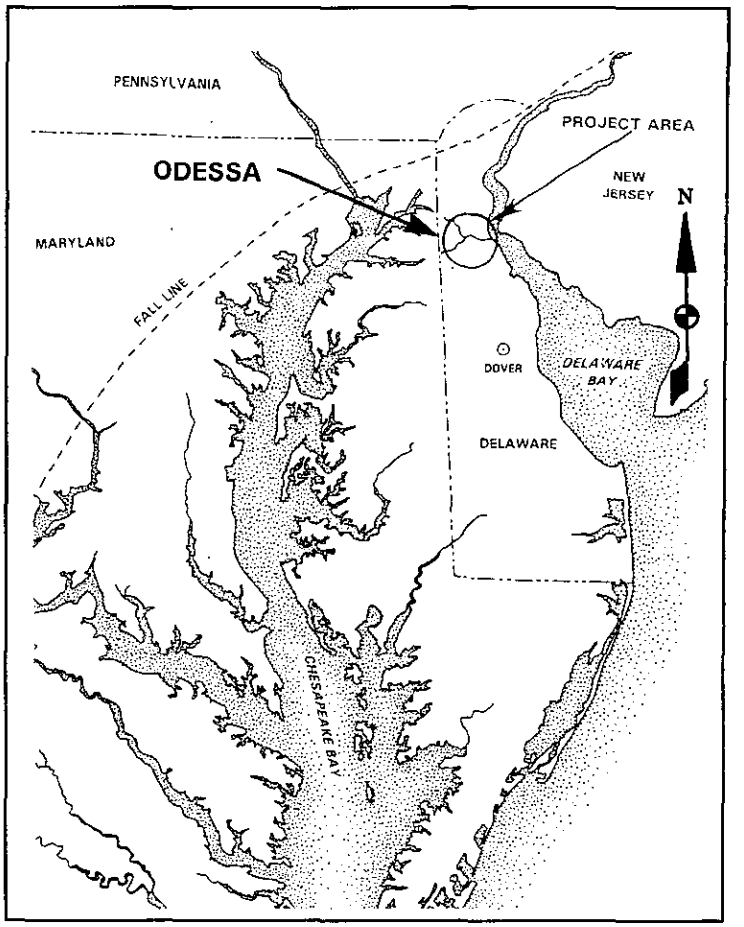

FIGURE 1: Project Area Location

C. REGULATORY INFORMATION

Excavation of the McKean/Cochran Farm was undertaken by the Cultural Resource Group of Louis Berger & Associates, Inc., on behalf of the Delaware Department of Transportation. Data recovery was intended to mitigate the adverse effects of highway construction according to the regulations established by Section 101(b)(4) of the National Environmental Policy Act; Sections 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act; 36 CFR 771, as amended; the guidelines developed by the Advisory Council on Historic Preservation, published November 26, 1980; and the amended *Procedures for the Protection of Historic and Cultural Properties*, as set forth in 36 CFR 800. Artifacts were curated according to the standards of the Delaware State Museum.

D. SUMMARY OF PREVIOUS WORK

The Appoquinimink North Site was located during a Phase I Survey of the SR 1 corridor carried out by Berger in December 1994 and January 1995. The survey consisted of shovel testing at 10- and 20-meter intervals, and it revealed a large, thin scatter of prehistoric stone artifacts filling the entire area, and a domestic site dating to circa 1800 situated on the level hilltop. These findings were equated with Site 7NC-F-13, a prehistoric site previously recorded by amateur collectors. The prehistoric artifacts recovered consisted mostly of jasper and quartz flakes, but they also included a side-notched quartz projectile point and a very weathered argillite biface. The historic material

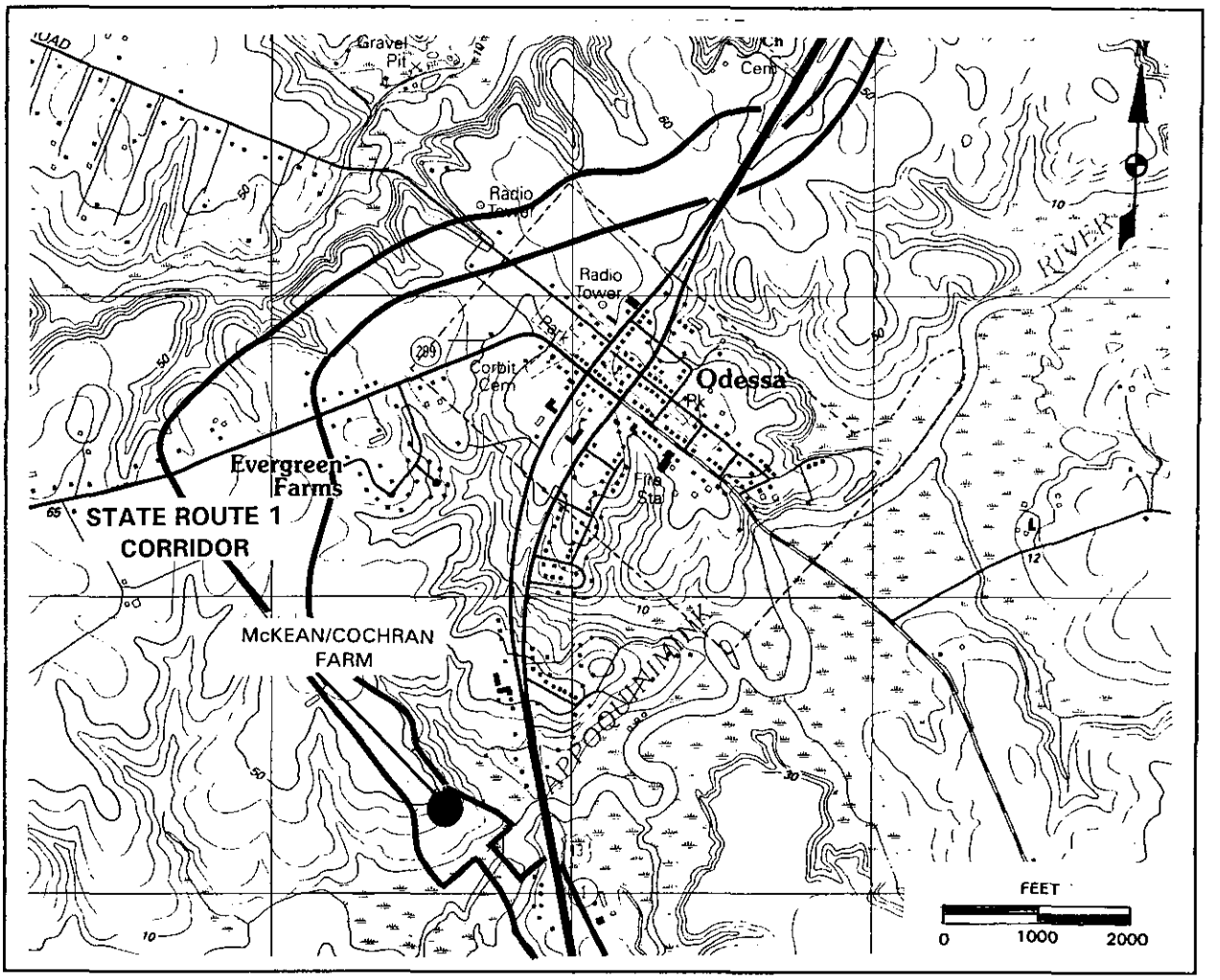

FIGURE 2: Location of the McKean/Cochran Farm Site ***SOURCE: USGS 7.5 Minute Series, Middletown Del. Quadrangle (photorevised 1993)***

included redware, pearlware, whiteware, white clay pipestems, wine bottle glass, a circa 1800 wine bottle base, case bottle glass, and substantial quantities of brick. No artifacts datable to the late nineteenth century were recovered, and an occupation date of 1800 to 1830 was suggested for the historic component.

Phase II testing of the site, carried out in April 1995, consisted of the completion of a 10-meter-interval shovel testing grid across the site and the excavation of 39 1x1-meter test units (Figure 3). One hundred and thirteen shovel tests (STPs) were excavated during the Phase II investigation, making a total of 197 excavated on the site.

Phase II testing recovered a number of prehistoric artifacts, including stone spearpoints and knives, from all parts of the site. In most areas the artifact density was low, but an artifact concentration was found on a low rise near the river in the southeast corner of the site. Thirteen 1x1-meter test units were excavated in this area, designated the South Locus. Up to 43 artifacts, almost all stone flakes, were recovered from a single test unit. One projectile point, a broadspear resembling the Snook Kill

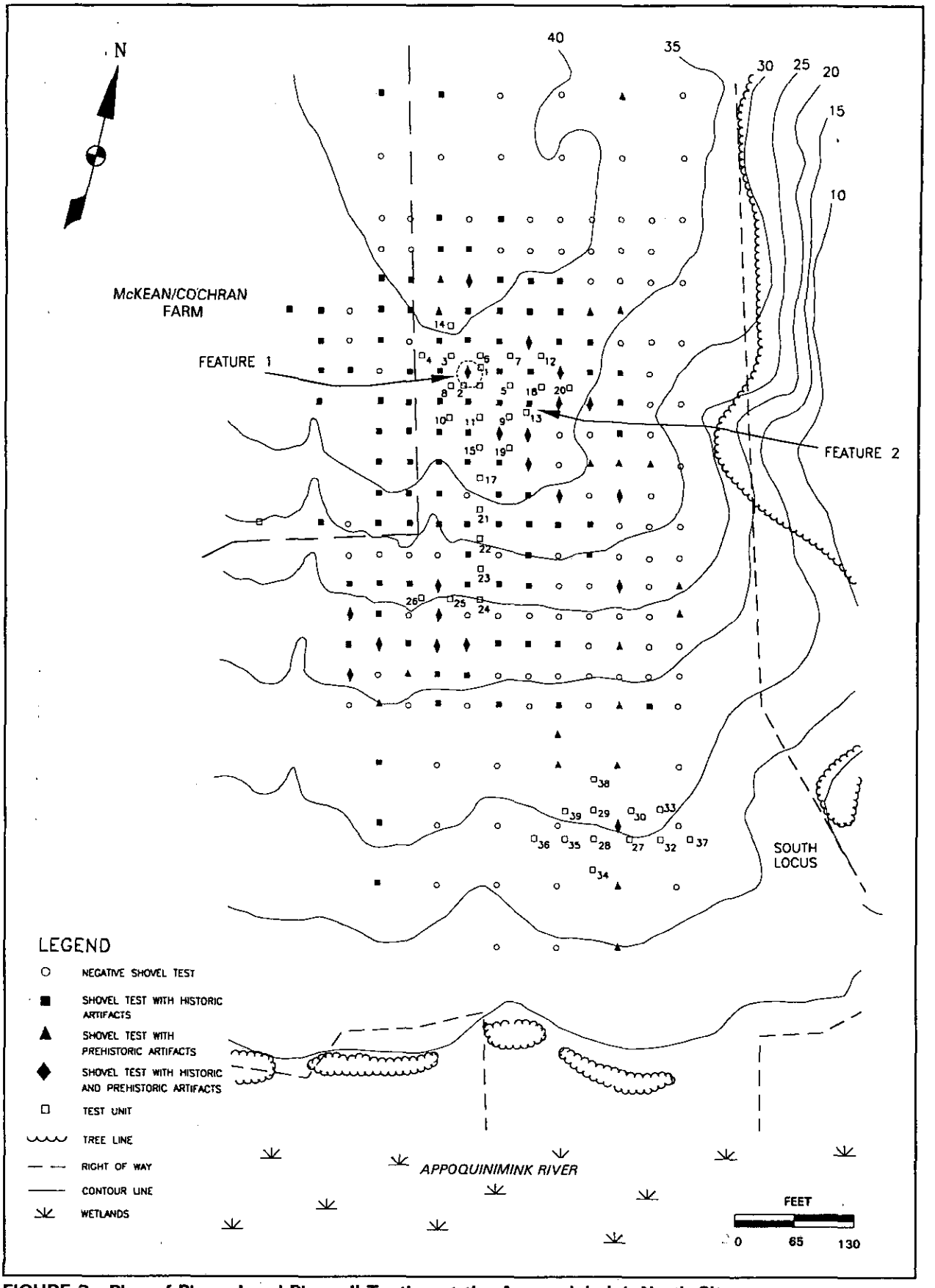

FIGURE 3: Plan of Phase I and Phase II Testing at the Appoquinimink North Site

variety, was recovered from the South Locus. Three other diagnostic spearpoints were recovered during the testing—two narrow, weak-shouldered, stemmed points resembling the Lamoka variety and a side-notched quartz Halifax point. Together, these points suggest occupation of the site in the early Woodland I (or Terminal Archaic) period, 3000 to 1000 BC. The excavated test units show that the artifact concentration in the South Locus was small, no more than 20 meters across, since densities of five or fewer artifacts per test unit were reached in all directions. Almost all the material, in the South Locus and elsewhere on the site, was recovered from the plowzone. A few individual flakes were recovered from below the plowzone, but these were attributed to disturbance.

The majority of the Phase II testing, 26 of 39 test units, was focused on the historic component. Test units excavated in the core of the historic site yielded up to 130 artifacts (excluding brick, which was not collected) from the plowzone. The artifacts were typical of a domestic site dating to the 1770 to 1830 period, and included creamware, pearlware, whiteware, white salt-glazed stoneware, Westerwald blue and gray stoneware, white clay pipestems and pipe bowl fragments, wine bottle glass, cut nails, window glass, and large quantities of redware and brick. A single coin was recovered, a battered silver piece tentatively identified as a Spanish real.

In addition, at least three historic cultural features were found on the site. Feature 1 was a large (approximately 20x20 feet), deep (at least 4 feet) pit containing a variety of fills, all of which yielded historic artifacts. The preliminary interpretation was that this feature was a backfilled well, but it proved to be the cellar of the second house built on the site. Feature 2 appeared to be some sort of construction feature, possibly a large, structural posthole. Feature 3 was a pit of undetermined function.

On the basis of these findings, Berger recommended the historic component of the site as eligible for listing in the National Register of Historic Places under Criterion D, because it had the ability to provide important information about regional history. After consulting with the Delaware SHPO, DelDOT accepted this recommendation for planning purposes. The site was situated directly on the centerline of SR 1, and could not be avoided without significant redesigning of the highway, including moving the location of a major bridge. The alignment of SR 1 had been selected after a lengthy process of consultation and public input. The locations for stream crossings had been chosen to minimize the effect on wetlands and historic resources, so changing the alignment would have been difficult. A large number of archaeological sites are located on both banks of the Appoquinimink River, and a different crossing point would almost certainly have damaged other sites. Therefore, it was decided to mitigate the effects of highway construction by extensive archaeological excavation of the site.

II. HISTORICAL BACKGROUND

A. THE SETTLING OF THE APPOQUINIMINK RIVER VALLEY

The first European settlers along the Appoquinimink River were Dutch. Dutch traders had been working on the Delaware River since the first decade of the seventeenth century, but it was not until 1651 that they established a permanent settlement, and then only in response to the actions of the Swedes, who had constructed Fort Christiana in 1638. The Dutch established their base at Fort Casimir, near modern-day New Castle, and challenged the Swedes and English for control of the Delaware River. The first Dutch settlements were around New Castle and Lewes, but in the later 1650s the interest of the settlers turned toward the Appoquinimink River as a likely ground for expansion. The headwaters of the Appoquinimink River near Middletown are only a few feet from the headwaters of Bohemia Creek, a navigable stream that flows west toward the Chesapeake Bay, and in colonial times the distance between navigable water on the two creeks was less than five miles. Already in the 1650s trade between the Dutch settlements and Maryland had sprung up along this route, and two landings had been established in the vicinity of Middletown. In 1661, Alexander d'Hinojossa, administrator of the Dutch settlements, met Cecil Calverton, governor of Maryland, on the Appoquinimink River to discuss trade between the two colonies. A regular road, known as the Bohemia Cart Road, soon developed between the Appoquinimink River landings and Bohemia Manor in Maryland. The exact date of the first Dutch land grants on the Appoquinimink River is not clear, but several grants seem to have been made by 1663.

In 1664, during the second Anglo-Dutch War, the British seized the Dutch colonies in North America, and their possession of these territories was confirmed by the Treaty of Breda in 1667. Several leaders of the Dutch colonies lost their land, but most of the settlers had their patents confirmed by the British in 1671. Many Dutch settlers prospered and even held political office under British rule, and intermarriage between English and Dutch settlers was common. The Appoquinimink River Valley remained an area of mixed English, Dutch, and Swedish culture until the early eighteenth century, when the other traditions were absorbed into the dominant English culture.

The McKean/Cochran Farm was located on a 300-acre tract patented by Barent Hendrickson sometime in the 1660s. The tract was bounded by the land of Adam Peters on the northeast and John Breadband on the southwest, and Hendrickson paid three bushels of winter wheat as annual quitrent (Sunday Star Print 1903:146). Dutch land grants were characteristically laid out in narrow strips from stream to stream, called "long lots" (Heite 1972), and Hendrickson's patent extended from the Appoquinimink River to Drawyer Creek. (The long lot system was developed in medieval Holland during the draining of the Rhine marshes, with each lot extending between two major canals and separated from its neighbors by smaller canals. The system allowed each farmer access to the canal and made it easier to distribute the burden of maintaining the canals among all those who benefited

from them.) The Dutch grants along the Appoquinimink River were thought of as a town, called Appoquemenen, and some communal institutions did develop in the area.

Although the Dutch government granted lots along the Appoquinimink River to at least a dozen men, no archaeological sites dating to the Dutch period have been found in the Odessa area. Since several archaeological surveys have now been carried out around Odessa, and several local collectors have been looking informally for such sites for decades, sites dating to the Dutch period must be very rare. It seems that few, if any, of the Dutch property owners actually took up residence on their lots. The archaeological survey carried out as part of the SR 1 projects covered most of at least two Dutch long lots, and showed conclusively that neither had been occupied before 1750 (Bedell et al. 1997). One possible explanation is that rather than building on their lots the Dutch owners lived in houses in the center of the town, on land that is now buried beneath the modern town of Odessa.

The Dutch settlement system gradually disappeared, to be replaced by the English "metes and bounds" system, in which most lots were rough squares bounded by roads, streams, and other natural features, connected by arbitrary lines, and the Dutch township organization was replaced by an Anglo-colonial system based on counties and hundreds. Delaware is the only state which retains the hundred, an ancient, Anglo Saxon division of the county, as a jurisdiction; New Castle County is divided into 10 hundreds, and the McKean/Cochran Farm is located in St. Georges Hundred.

B. HISTORY OF THE MCKEAN/COCHRAN FARM

Sometime between 1671 and 1695, Barent Hendrickson sold the 300 acres of land held in Appoquemenen to Paul Barnes (Table 1). On March 3, 1695, Barnes sold this land to Hilitie Anderson, wife of Roaloffe Anderson (Tribune Publishing Company 1935:218). On February 19, 1700, Hilitie Anderson, now a widow, conveyed three parcels of land to her father, Adam Peterson. The three parcels consisted of 380 acres on the north side of the Appoquinimink River in the tenure of Abel Dodd, 400 acres of land on the south side of the same creek in the tenure of John Job Nanscoyne, and a lot situated in the city of New Castle in the possession of Samuel Vans (unrecorded deed, cited in New Castle County [NCC] Deed Book C-1:11). The 380 acres on the north side of the Appoquinimink River seems to have included the 300 acres Hilitie Anderson had received from Paul Barnes in 1695. Transfers of land from children to their fathers were unusual, and this transaction may have been part of an exchange.

Adam Peterson, Sr., was a major landowner in the Appoquinimink area. In 1684 he was assessed for 390 acres of land on the north side of the Appoquinimink River (Heite 1972:33), and by the time of his death in 1707 he owned three tracts totaling 1,204 acres in the Middletown vicinity. One of these was known as New Tiel, and another as Middletown (Heite 1972). Adam Peterson, Sr., had five children who survived to adulthood: Adam [Jr.], Andrew, Hermania, Hilitie, and Garret, names which were often repeated among their descendants. Hermania married Matthias Van Bibber, a Maryland merchant. Her brothers married nieces of Matthias Van Bibber: Andrew married Hester Van Bibber and Adam married Veronica Van Bibber Birmingham. Hilitie married Isaac Vigoren.

Table 1. List of Property Owners

DATE	TRANSACTION
1991	Fusco Properties, from Commonwealth Trust Company (NCC Deed Book 1148:275, 280)
1986	Commonwealth Trust Company, from Spring Valley Farms (NCC Deed Book 481:310)
1969	Spring Valley Farms, from Walter and Thelma Guseman (NCC Deed Book U-81:128)
1945	Walter and Thelma Guseman, from the executors of Daniel Corbitt's estate, for $10 (NCC Deed Book R-45:262)
1923	Daniel Corbitt, inherited from Alexander Corbitt (NCC Deed Book D-43:83)
1907	Alexander Corbitt, inherited from John C. Corbit (NCC Deed Book D-43:83)
1888	John C. Corbit, from Catherine Pascault (NCC Deed Book N-14:337)
1888	Catherine Pascault, from William A. Cochran (NCC Deed Book H-14:337)
1843	William A. Cochran, inherited from Robert Cochran (NCC Will Book U-1:208)
1830	*McKean/Cochran Farm abandoned (approximately)*
1814	Robert Cochran, from T.M. Thompson, executor of Letitia Clark's will (NCC Deed Book G-4:454)
1775	Letitia Clark and Thomas Clark, inherited from Veronica Peterson (NCC Will Book N-1:161)
1763	Veronica Peterson, inherited from Adam Peterson, Jr. (NCC Probate Records, Adam Peterson 1763)
1750	*McKean/Cochran Farm established (approximately)*
1707-	Adam Peterson, Jr., inherited from Adam Peterson, Sr., and purchased from his siblings (NCC Deed Book 1763 C-1:111)
1700	Adam Peterson, Sr., from Hilitie Anderson (NCC Deed Book C-1:111)
1695	Hilitie Anderson, from Paul Barnes (Tribune Publishing Company 1935:218)
1671-1695	Paul Barnes, from Barent Hendrickson (no surviving deed)
1671	Barent Hendrickson, patent confirmed (Sunday Star Print 1903:146)

No will for the elder Adam Peterson survives in the New Castle County records, but his large landholdings appear to have been divided among his five children. In 1700, Hilitie and Hermania and their husbands transferred their shares of the estate to Adam and Veronica, and by the time of his death in 1763, Adam Peterson, Jr., controlled all these lands (NCC Deed Book C-1:111). After the payment of his debts, funeral expenses, and a legacy of £50 each to his cousins Richard and Lydia Cantwell, he bequeathed the remainder of his estate to his "loving" wife, Veronica Peterson (NCC Probate Records, Adam Peterson 1763). The frequent transfers of the property, and its incorporation into several different large blocks, represent a common pattern of land speculation among wealthy colonists. Buying and selling property was one of their obsessions, and most tracts changed hands several times. This was especially true of properties, like the Hendrickson tract, that had not become the seats of farms.

Veronica Van Bibber, Adam Peterson, Jr.'s wife, was first married in 1726 to John Birmingham (Figure 4). The Birminghams had two daughters, one of whom was named Mary. Veronica had been widowed by 1735, when she married Adam Peterson. Adam and Veronica had no children. When Adam gave his farm to Veronica, therefore, he was disinheriting his blood relations, and one wonders if they objected. Whatever the case, there is no record that they ever took legal action against Veronica. Veronica's daughter, Mary Birmingham, was first married to Matthew Reah, with whom she had a daughter, also named Mary. Mary Birmingham was evidently widowed, because she married William McKean in about 1765. He became the guardian of her daughter, Mary Reah (NCC Orphans' Court Record E-1:98). William and Mary McKean also had two children of their own, Thomas Birmingham McKean and Letitia McKean.

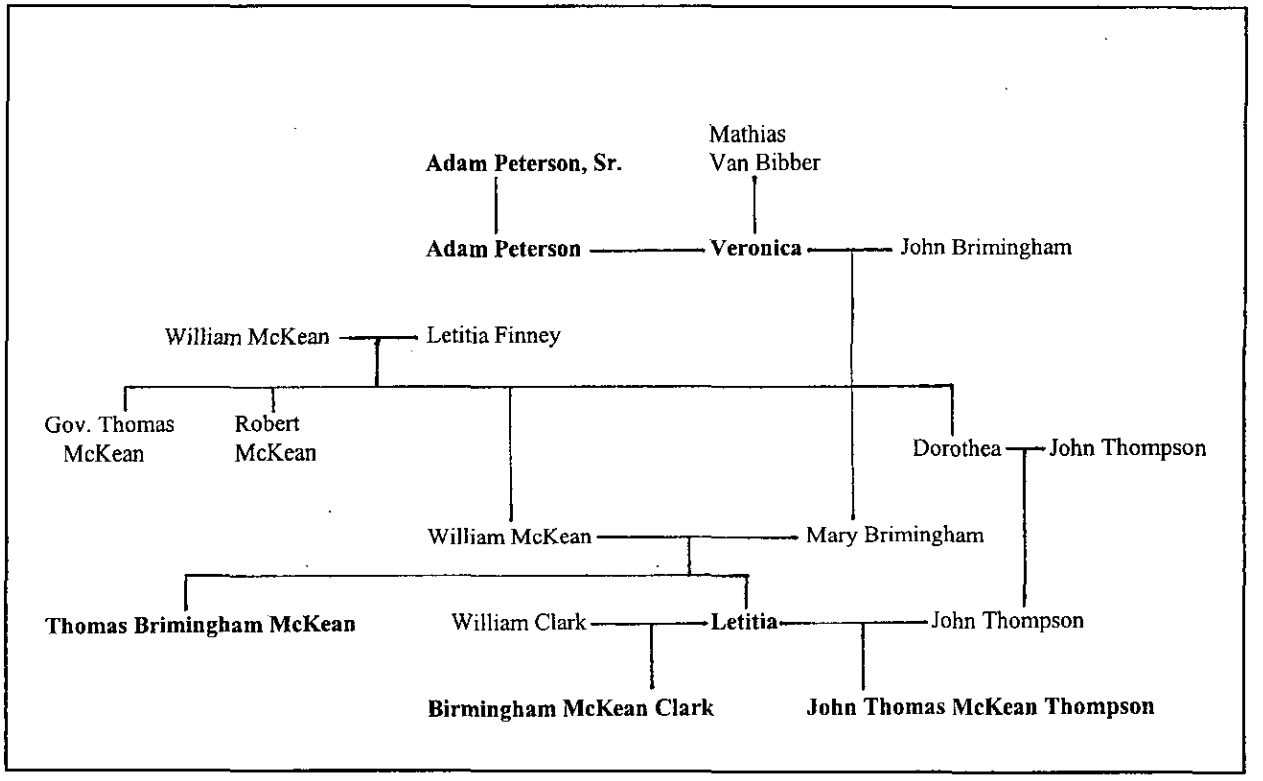

FIGURE 4: Family Tree of Letitia McKean (owners of the McKean/Cochran Farm in boldface)

William McKean's grandmother had immigrated from Ireland by 1725. Her son, also named William McKean, was a tavern keeper. He married Letitia Finney, with whom he had three sons and a daughter. William and Letitia McKean saw carefully to their children's education, and all of the children became socially prominent. Their eldest son, Robert, was a doctor of medicine and a clergyman in New Brunswick, New Jersey. Thomas McKean, the second son, had a truly remarkable career. He was a delegate to the Continental Congress from Delaware and one of the signers of the Declaration of Independence. He became Pennsylvania's chief justice in 1777 and held that office for 22 years. He simultaneously served in Delaware's House of Assembly and as a congressional delegate. In 1799 he began serving the first of three consecutive terms as governor of Pennsylvania. Thomas McKean's simultaneous service in the governments of Pennsylvania and Delaware underlines the close connections between the two states, although he did give up his Delaware offices when he became Pennsylvania's governor. He married Mary Borden, one of the Bordens of Bordentown, New Jersey, and they had several children. One daughter, Sally McKean, was a celebrated beauty of the day, and from her many suitors she chose to wed a Spanish nobleman who was serving as ambassador to the new United States, becoming the Marchioness de Casa Yrujo.

William and Letitia's daughter, Dorothea, married John Thompson, of Delaware. The Thompsons maintained close ties with their McKean relations. Their only son, Thomas McKean Thompson, became Pennsylvania's secretary of state under his uncle (Buchanan 1890:9-10, 54, 106).

William and Letitia McKean's youngest son was William. He and his wife, Mary, had a house in Newark, Delaware, and a plantation on Duck Creek in Appoquinimink Hundred, which they rented out. William and Mary's one son and one daughter—Thomas Birmingham McKean and Letitia McKean—were particularly fortunate children. They grew up in a wealthy household and became rich in their own right while they were still minors. In 1775, Veronica Peterson conveyed 400 acres of land on the north side of the Appoquinimink River, including the McKean/Cochran Farm site, to Thomas and Letitia, who were her grandchildren. Letitia may have been a favorite of Veronica's, since she also willed to her a set of silver spoons. Because Thomas and Letitia were minors, in fact both still under the age of 10, trustees were appointed to act for them in legal and property matters. The trustees were their uncle, Thomas McKean, and John Thompson, Esq. Veronica was about 84 years old when she transferred her property to her grandchildren. Her only other heirs were her granddaughters Mary Reah O'Hara Frazier and Nancy McLean. Veronica Peterson died in 1785. In her will, she bequeathed a farm called "The Mansion Plantation" to Thomas and Letitia. Thomas and Letitia were thus quite wealthy, having inherited property from their father and their grandmother. Veronica also left farms to her other granddaughters, Mary and Nancy (NCC Court of Chancery Records, *William Clark Frazier* vs. *Robert Maxwell*; NCC Deed Book N-2:381).

It is interesting that the descendants of Veronica Van Bibber Peterson and John Birmingham never used any of the given names or surnames from the Dutch and Swedish side of the family. None of the Birminghams, McKeans, or Thompsons who inherited the farm on the Appoquinimink River ever honored the Dutch and Swedish founders of the plantation. Despite Veronica's bequests and her apparent relationship with her grandchildren, her name dropped out of use in the family. John

and Veronica's marriage took place around the time when, according to contemporary observers, distinctive Dutch and Swedish cultural practices were fading from the area (Kalm 1937).

William McKean wrote his will in 1779, before beginning a voyage to the West Indies. In it he left his Duck Creek plantation to his son, Thomas, and his town lots in New Castle to his daughter, Letitia, and asked his brother-in-law, John Thompson, to bring up his children and look after their finances should he and his wife die. William also specifically asked his brother, Thomas McKean, to arrange for young Thomas to study law (NCC Will Book L-1:258). William McKean died in 1779, soon after writing his will, and his wife, Mary, not long after. Thomas and Letitia, still minors, were indeed looked after by their uncles. Financial records concerning the McKean estate indicate that Letitia's education included dancing lessons and tutoring in writing and arithmetic (NCC Probate Record, Estate of William McKean, Executor's Account, 1782). While he was growing up, Thomas Birmingham McKean received money from his uncle Thomas for living expenses. The money was later repaid when William and Mary McKean's estates were settled in 1788. Thomas Birmingham McKean became a merchant rather than studying law as his father had wished (NCC Court of Chancery Records, *John Thompson, Esq.* vs. *Mary and William Johnson*).

An inventory of William McKean's personal property was made on January 3, 1782. His personal property was appraised at £523.5.10, of which £360 was the value of his slaves. McKean owned seven slaves. Letitia McKean was also the owner of a slave, a gift from her grandmother, Veronica Peterson, along with the silver spoons. Many of the items in the inventory indicate that the McKeans were wealthy, prominent people. The inventory lists a walnut desk, a pewter inkstand, a large walnut dining table, a tea table, a large looking glass, china, delft, and pewter dishware, and a silver watch (NCC Probate Record, Estate of William McKean, 1782).

Thomas Birmingham McKean died at Bordentown, New Jersey, in 1788, when he was about 22. He bequeathed his entire estate to his sister, Letitia, who was then about 15 years old. His will stipulated that if Letitia died while still a minor and without children, his estate would pass to his cousins, Joseph, Robert, Elizabeth, Letitia, and Ann McKean, the children of Thomas McKean. Thomas ordered his executors, his cousins Joseph and Robert McKean, to rent out his real estate and invest the proceeds in order to supply Letitia with an "education, clothing, boarding and other contingent expenses" (Burlington County [New Jersey] Estate File 11246). Letitia McKean held sole title to the Appoquinimink North farm for 26 years.

Letitia married twice. Her first marriage was to a Presbyterian minister named John Thompson, with whom she had a son, John Thomas McKean Thompson. Her husband was almost certainly her first cousin, the son of her uncle, John Thompson. Such marriages between cousins, although condemned by Quakers and Puritans and therefore rare in Pennsylvania and New England, were common among the British elite both in Virginia and in England (Fischer 1989:284). John Thompson, Letitia's husband, was a wealthy and well-educated man, a graduate of Princeton. He became minister of a congregation in New York, but he had not been there long when he died, in 1795. According to his will (NCC Will Book O1:79), he left one-third of his estate to Letitia and two-thirds to their young son. John appointed Letitia and his brother, Thomas Thompson, guardians of the boy. In the will,

John Thompson offered Letitia "her choice of my two carriage horses" and "a good new chaise (carriage) to be purchased by my executors."

In 1797, Letitia, a widow, appears as "Latitia Thompson" on a list of taxables for St. Georges Hundred. She owned 400 acres of land in the hundred, of which half were improved. Her farm, worth $1,600, included a house, kitchen, barn, crib, and smokehouse (NCC Tax Assessment 1797:not paginated). This list provides the first written record of the buildings on the McKean/Cochran Farm. In about 1799, Letitia was married for the second time, to William Clark. They also had a son, whom they named Birmingham McKean Clark. Neither death records nor estate papers could be located in Delaware for Letitia's husband, William Clark. He died sometime between 1806 and 1810. Letitia was enumerated in the 1810 census in St. Georges hundred as a widow with four other people in her household. These were her two sons, both under 16 years of age, a woman between 26 and 45, and an African-American person (U.S., Bureau of the Census, 1810:280). Letitia Clark died in 1813 in Washington County, Pennsylvania, where she had probably been visiting her Thompson relatives. She bequeathed her entire estate to her two sons, who were still under the age of 21. Letitia appointed her cousin, Thomas McKean Thompson, to be the guardian of her son, Birmingham, and to be the sole executor of her will. Letitia wrote her will on October 14, 1813, in Washington, Pennsylvania, a town located southwest of Pittsburgh. The will was probated in Washington County on November 3, 1813, and a copy was filed in New Castle County.

Because Letitia's children were minors, her estate was administered for them by their guardian. Thompson, the guardian, kept very careful records of the expenditures from the estate, and these records are still on file in Washington, Pennsylvania (Washington County Accounts C-8, 1818). In her will Letitia asked that her personal possessions be sold to pay off her debts, and some of the items sold are itemized in the estate papers. These included 10 pairs of kid gloves, four pairs of silk gloves, and a quantity of fine cloth, suggesting a love of fine clothes. No inventory of her possessions in Delaware survives, but there is a list of her possessions in Philadelphia. The list appears to describe the furnishings of a single room, perhaps in the house of one of her Philadelphia relatives. It was an elegant room, furnished with a mahogany writing desk and tea table, a high-post bedstead and featherbed, an open (Franklin) stove, a china tea set, a gilt framed mirror, and a gilt framed painting of the Nativity. Letitia seems to have kept a residence in Philadelphia even after she established herself at the McKean/Cochran Farm. The records from her son Birmingham's minority describe his time at Washington College in Pennsylvania, where his tuition was $10 a term and he paid $2.50 a week for room and board. His books are listed—a Greek and Latin grammar, a Classical dictionary, a book of "Roman Lives," and works by Caesar, Virgil, and Horace—and show that his studies focused on Latin and Greek. Both of Letitia's sons seem to have inherited her interest in clothes, and the records include numerous charges for suits, coats, shirts, and beaver hats. After Benjamin graduated from college and came of age he moved further west, rather than returning to Delaware, and he became a prominent attorney in Arkansas.

On June 14, 1814, Thomas McKean Thompson (apparently the brother of her first husband), executor of Letitia Clark's will, sold the 400-acre farm tract on the Appoquinimink River to Robert

Cochran at public auction for $8,000 (NCC Deed Book G-4:454). For the next 74 years the land remained in the Cochran family.

The Cochran family of Delaware were descended from the Cochrans who had left Paisley, Scotland, for northern Ireland in about 1570. The American progenitor of the Cochran family first settled in Chester County, Pennsylvania, in about 1742. The Cochran family of St. Georges Hundred were descended from John and Mary Cochran of Cecil County in northern Maryland (Figure 5). John Cochran paid taxes on land in St. Georges Hundred between 1780 and 1787, but he is first recorded as living in Delaware in 1800. The census of that year recorded his household as consisting of one female under the age of 10, two males 10 to 16, two males 16 to 26 and one male 26 to 45, one female over 45, one free servant, and 13 slaves. The ages of the whites enumerated conform to those of John and Mary Cochran and their six children. In 1813, John Cochran paid tax on 41 cattle, 10 slaves, and metal-ware or "plate" (NCC Tax Assessments 1813:not paginated). The Cochrans' movements between southern Pennsylvania, northern Maryland, and Delaware underscore the close cultural ties among these areas, all of which can be described as part of the Pennsylvania or Middle Atlantic cultural sphere (Glassie 1968).

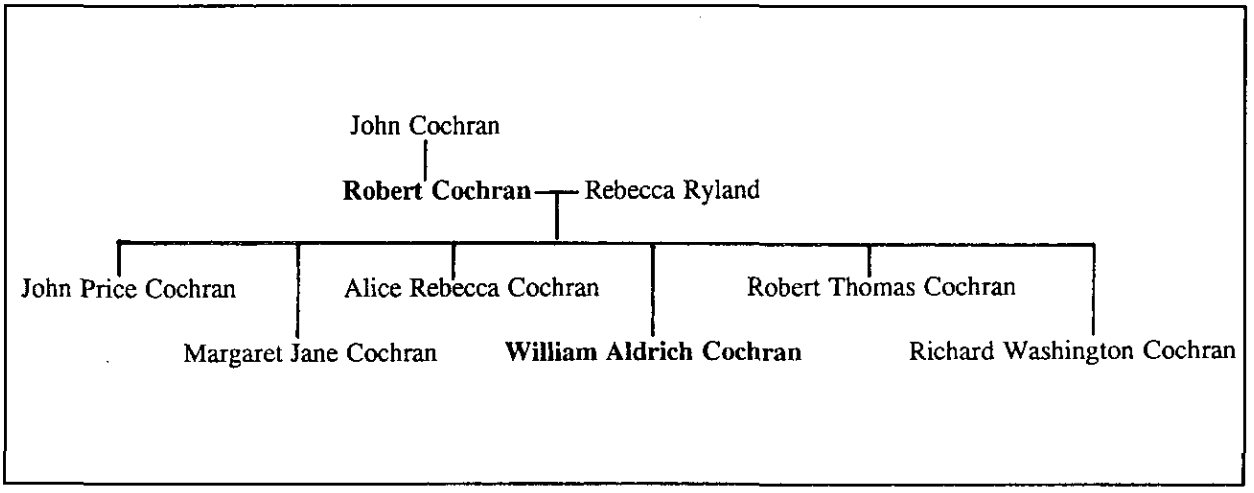

FIGURE 5: Cochran Family Tree (owners of the McKean/Cochran Farm in boldface)

John and Mary's son Robert married Rebecca Ryland in 1808 at the age of 27. Together, Robert and Rebecca Cochran had six children: John Price Cochran, Alice Rebecca Cochran, Robert Thomas Cochran, Margaret Jane Cochran, William Aldrich Cochran, and Richard Washington Cochran (Cochran Family Reunion Booklet 1986). Although young families of the Cochrans' status usually set up households soon after marriage, Robert and Rebecca were not listed in the census until 1820. That portion of the census record is very difficult to read, but it clearly lists Robert, age 39, and three sons under the age of 16. Rebecca Ryland died in 1824 at the age of 36. The more legible 1830 census lists Robert Cochran, three sons under 20 years of age, two daughters between 5 and 10, and a female over 70, who may have been Robert's mother or mother-in-law. It is not known who the young girls were, since the recorded daughters should have been much older at that time.

Robert Cochran's mansion farm, which included the McKean/Cochran Farm, consisted of almost 400 acres, situated between the Appoquinimink River and Middletown Road. In 1816, Robert Cochran paid taxes on 388 acres of land, 288 acres of which were improved. The farm included a "good wooden dwelling" and a log stable. He also paid taxes on 100 acres of "branch and cripple" (a branch is a small stream, and cripple is marsh), 50 acres of woodland, one lame male slave named Moses, two female slaves named Hannah and Susan, and unspecified livestock (NCC Tax Assessment 1816).

C. LATER HISTORY OF THE PROPERTY

By the time Robert Cochran died, in 1843, the McKean/Cochran Farm Site had been abandoned. Cochran divided the farm between two of his sons, Richard Washington Cochran and William Cochran, and the description of the division mentions "the place where a gate stood formerly, the entrance into the old road or lane that used to lead down to the old frame dwelling house" (NCC Will Book U-1:208). William obtained the mansion house and 270 acres of land, including the McKean/Cochran Farm Site, while Richard received 150 acres. The two new farms included frontage on both Middletown Road and the Appoquinimink River, with William's farm east of Richard's. The division of the farm has survived to the present day. These two farms appear on the 1849 Rea and Price map of New Castle County (Figure 6) as "R.S. Cochran" (sic) and "W.A. Cochran." Later maps call the W.A. Cochran farm "Spring Valley" and the R.W. Cochran farm "Retirement." The elder Cochran's will also specified that six of his slaves be freed when they reached the age of 28. This provision, based on the notion that slaves ought to work off the cost of raising them, meant that parents Sally and Lewis Wright would be freed years before their children, and we can assume that they continued to live at or near the Cochran farm until their children were of age. The Cochrans owned other slaves who were not freed until the Civil War.

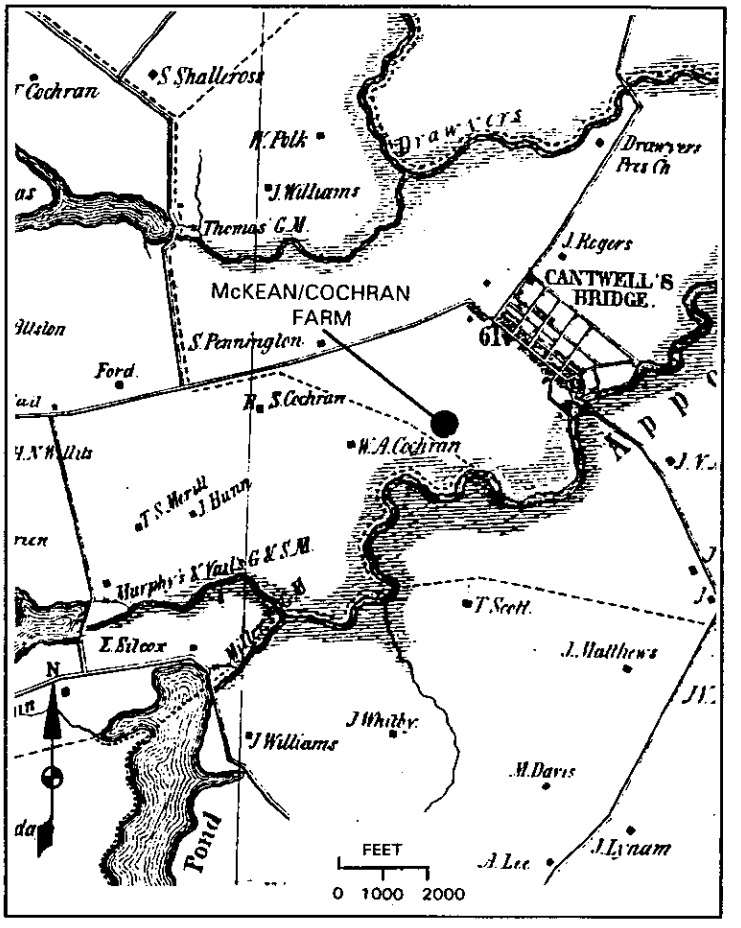

FIGURE 6: Rea and Price Map of 1849, Showing the Location of the McKean/Cochran Farm, Abandoned Around 1830

Both Cochrans appear in the population and agricultural schedules of the 1850 U.S. Census. W.A. Cochran had real estate worth $16,000, and his household included his wife, Sarah, his children, Harry, Francis (Fanny), and Sarah, a 35-year-old laborer from Maryland named William G., a 22-year-old laborer from Ireland named Sarah McDougherty, and three male slaves. The farm produced wheat, oats, Indian corn, Irish potatoes, hay, and 832 pounds of butter. The Cochran family continued to grow, and in 1870 included eight children. Sarah Cochran, the mother, died in 1873.

William Cochran retired in 1886, at the age of 66, and went to live with his daughter Fanny, who had married a cousin named Richard R. Cochran and still lived in St. Georges Hundred (Cochran Family Reunion Booklet 1986). Tenant farming was on the rise in Delaware in that period (De Cunzo and Garcia 1993:28), and Spring Valley was presumably leased to tenants. The arrangement must not have worked out satisfactorily, however, because in 1888 Catherine Pascault of Talbot County, Maryland, brought suit against William for nonpayment of a mortgage. The farm was sold at auction to pay the debt, and Catherine Pascault was the highest bidder (NCC Deed Book H-14:337). Pascault resold the farm six months later to John C. Corbit for $10,000 (NCC Deed Book N-14:337). At that time the farm was said to include 250 acres.

The Corbits retained ownership of Spring Valley until 1942. After a series of transactions, it was obtained by Walter C. Guseman in 1945 (NCC Deed Book R-45:262). In 1969 Walter and Thelma Guseman sold this tract, along with two others, totaling 413 acres, to Spring Valley Farms, Inc., for $380,000 (NCC Deed Book V-82:71 and V-82:68). Sometime between 1969 and 1986 Spring Valley Farms conveyed half their interest in the three parcels to Appomink Farms, Inc., which seems to have had the same owners as Spring Valley. In 1986, Spring Valley and Appomink sold all three parcels to the Commonwealth Trust Company (NCC Deed Book 481:310), and in 1991 Commonwealth conveyed them to Fusco Properties, a Delaware Limited Partnership, for $1 (NCC Deed Book 1148:275, 280).

D. HISTORY OF THE SITE

The McKean/Cochran Farm was established in about 1750, when the property belonged to Adam Peterson and his wife, Veronica Van Bibber Birmingham Peterson. Adam Peterson's main residence seems to have been on his Middletown farm, which Veronica in her will called the "Mansion Plantation," so the McKean/Cochran Farm was probably occupied by tenants. After 1775 the property belonged to two children, Letitia and Thomas McKean, and the farm continued to be leased out. In 1788, when he died, Thomas McKean had directed in his will that the farm be rented out to support his younger sister. In 1797, Letitia paid taxes on the farm and its buildings in St. Georges Hundred, but not the poll tax. Since she did not pay poll tax in St. Georges Hundred she probably lived elsewhere, implying that the farm was still occupied by a tenant. For a tenant, however, the farmer of the McKean/Cochran property ran an unusually large and well-stocked operation. Architectural historians can usually identify tenant farms because of the relatively few outbuildings present; people who do not own the land they farm are often unwilling to invest much capital in structures that would belong to the property owner. Yet the tax record of 1797 clearly states that the McKean/Cochran Farm included a house, a barn, a granary, a kitchen, and a smokehouse. The size

of the property, 388 acres, is also unusually large for a tenant. The tenant farmer seems, therefore, to have been quite secure in his position. Perhaps he was a relative of the owners, or a close friend.

From 1814 until its abandonment in around 1830 the farm was occupied by Robert Cochran. Cochran was a wealthy man and he eventually constructed a much grander house for himself at "Retirement," half a mile inland from Site 7NC-F-13. His will shows that the new house had definitely been built by 1843, which supports the archaeological evidence that the McKean/Cochran Farm had been abandoned by that date. Robert's son Richard later built an even grander house, called Spring Valley, on his half of the estate, a few hundred yards from the McKean/Cochran Farm Site. For the Cochrans, Letitia McKean's old house was merely a temporary lodging where they stayed until they had invested enough time and money in their farms to begin constructing the grander houses that suited their wealth and status.

III. RESEARCH DESIGN

A. INTRODUCTION

The excavation and study of the McKean/Cochran Farm were guided by a research design prepared before the beginning of fieldwork. The field and laboratory methodologies were designed to answer the questions outlined in the research design. Archaeologists generally agree that their work is best carried out in this way, with a well-defined research agenda aimed at answering particular questions about the past. Although we cannot always anticipate the questions, or the kinds of data, that future archaeologists will find important, it is still preferable to attempt to answer a few questions than to conduct an unplanned excavation that may address none. The research agenda for the excavations at the McKean/Cochran Farm is described in this chapter, along with the field and laboratory methods designed to carry out that agenda. Of course, some of the discoveries made during the project were surprises, and the research has led us in directions we had not anticipated when we began. The new research themes developed during the course of excavations are also outlined here.

The overall context for federally funded or permitted archaeological research is provided by the Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs. The Secretary of the Interior's Standards were designed as a tool to be used for organizing information in such a way as to provide a sound basis for decisions concerning the identification, evaluation, and treatment of cultural resources. The process begins with the creation of historic contexts that define the conceptual framework for a set of resources, or property types, that share a thematic or topical unity as well as relatively well-defined geographic and temporal limits. The importance of individual properties is determined within historic contexts, not in isolation; a significant archaeological site is one that can increase our knowledge about a particular historic context. Historic contexts should, therefore, include research questions against which the importance of a site's information potential can be judged.

In the state of Delaware, the first definitions of historic contexts were based on a simple grid with axes for time period, geographic region, and site type (Ames et al. 1989). Delaware history was divided into five time periods: 1630-1730, 1730-1770, 1770-1830, 1830-1880, and 1880-1940+, which correspond roughly to important stages in the history of the state. Five geographic regions were identified: Piedmont, Upper Peninsula (within which the McKean/Cochran Farm is located), Lower Peninsula/Cypress Swamp, Coastal, and Urban (Wilmington). Eighteen historic themes were identified, 10 of which are economic (such as agriculture and manufacturing) and eight of which are cultural (such as settlement patterns, religion, and major families). This grid approach provides a neat way to classify sites, but the gridded historic contexts were not well developed. Contexts for historical archaeology were developed somewhat further in a planning document specific to the discipline (De Cunzo and Catts 1990), although detail on research issues was still sparse. Attempts have since been made to develop detailed contexts, including research questions, for some of the most common types of sites. The most important such efforts for the excavation of the

McKean/Cochran Farm are LuAnn De Cunzo and Ann Marie Garcia's *Historic Context: The Archaeology of Agriculture and Rural Life, New Castle and Kent Counties, Delaware, 1830-1940* (1992), and *"Neither a Desert nor a Paradise": Historic Context for the Archaeology of Agriculture and Rural Life in Sussex County, 1770-1940* (1993). Although neither of these documents covers New Castle County in the 1750 to 1830 period, the research questions they identify do, in general, apply, and they have been used in formulating specific questions for the McKean/Cochran Farm.

B. RESEARCH QUESTIONS

1. Rural Vernacular Architecture

The study of rural housing is dominated by standing buildings, but there are reasons for believing that standing houses are not a representative sample of the housing stock of the eighteenth and early nineteenth centuries (Carson et al. 1981; Chappell 1994). In order to obtain a balanced picture of past housing, it is necessary to study buildings that have been destroyed as well as those that survive.

Housing was, and is, one of the most important components of human material culture, and knowledge of the houses in which people lived is essential to understanding their lives. The houses and barns people built reflect not only their technology and wealth, but also their ethnic heritage, their conceptions of beauty, their notions of order, and their assumptions about private and public life (Herman 1987; Neiman 1980, 1986; Upton 1982).

During the seventeenth and eighteenth centuries, new intellectual and social norms emphasizing order, cleanliness, and the separation of public and private spheres developed in Europe; in Britain and America these ideas are usually referred to as "Georgian" (Deetz 1977). Under the influence of these norms, the better-off white people of America remade their houses and farms to provide a more orderly and private existence. In traditional European houses, even those of kings, sleeping, eating, and entertaining had been conducted in the same spaces. Dissatisfied with this arrangement, the rich began constructing separate bedrooms, dining rooms, and parlors. Privies, unknown in rural contexts from the seventeenth century, were dug, and small sheds were built over them to allow privacy. While the interiors of houses were changing to provide greater privacy, the exteriors were reshaped to provide a proper presentation of the owner's wealth and status. The Georgian facade, with its perfect balance and grand scale, was an almost philosophical statement of the order of the universe and the owner's role as an upholder of that order.

In the course of the nineteenth century Georgian conceptions of order spread into the middle class, developing into the ideology of proper home life we call Victorian. Privacy and the separation of home life from public life and work were further emphasized, although the emphasis on public grandeur was reduced. As Georgian ideas, which derived from the Anglo-Saxon elite, spread through the rest of the population, they interacted with the value systems and architectural traditions of other ethnic and economic groups. For example, the largely German population of central Pennsylvania developed both their own Georgian idiom and a different style of large, grand house, commonly known as the "Middle Atlantic Farmhouse" or the "Foursquare American." Technological

advances, such as affordable windows and machine-made nails, also influenced building techniques. Changes in housing therefore reflect profound changes in the whole intellectual structure of American civilization, and the interaction of those ideas with the many traditional value systems already present in America. The study of vernacular housing in the eighteenth and early nineteenth centuries can help us understand the spread and reception of new ideas and technology, the retention and modification of traditional values, and the development of the American middle-class ideal—indeed, the social and cultural history of North America.

At the McKean/Cochran Farm Site, an attempt was made to learn as much as possible about the houses and other structures that stood on the site by a detailed study of traces surviving below the plowzone. Surviving structural elements, whether brick foundations, brick pier bases, or postholes, were carefully mapped and fully excavated (Plate 6). The fieldwork was supplemented by archival study of tax records and other documents that might include descriptions of the farm and its buildings, and extensive library research on other structures from the period, both those still standing and those uncovered by other archaeologists.

PLATE 6: Mapping Feature 1, Cellar of the Later House, 1800-1830

2. *Landscape*

Housing is only one component of the environment people shape for themselves. People also modify their landscape in many other ways. The arrangement of barns and farmyards, the building

of fences, the cutting or planting of trees, the construction of roads, and the plowing of fields all shape people's lives, and these activities are all guided by cultural assumptions. These activities also often leave traces archaeologists can uncover, and the study of these traces is usually called landscape archaeology (Adams 1990; Beaudry 1986; Kelso and Beaudry 1990; Leone 1989; Praetzellis and Praetzellis 1989; Rubertone 1986). Many of the same issues that arise in the study of housing—in particular, the development of new, "Georgian" conceptions of proper order and the separation of domestic space from work space—are also important to landscape studies.

The importance of imposing order on the landscape to some people in the eighteenth century is well illustrated by an essay written in 1786 by Benjamin Rush, a Philadelphia intellectual who was a regular correspondent of Benjamin Franklin and Thomas Jefferson. Rush divided the farmers of the Delaware Valley into three "species" (Herman 1994). At the bottom of this hierarchy Rush placed the rough frontiersman, his rude cabin and half-cleared fields symbolizing his lawless, ignorant nature. At the top was the model farmer, a civilized man whose belief in education, law, and religion was reflected in his straight fences, completely cleared fields, large barn, and embrace of new agricultural technology. In between was the norm, a sort of middling civilized state. This ethic equated progress with ordering the landscape, and implied a strong equation between that order and the creation of wealth. Texts like Rush's essay, however, do not tell us whether anyone actually lived in the way he described. By studying, through archaeology and landscape architecture, the layout and siting of farms, and reconstructing the historic landscape, we can determine the extent to which farmers actually adopted the ideas of Rush and other progressive intellectuals.

To study the landscape of the farm, archaeologists employ the tools of spatial analysis. On a plowed site such as the McKean/Cochran Farm, spatial archaeology has two dimensions: the distribution of artifacts in the plowzone and the distribution of features beneath it. The distribution of plowzone artifacts reflects, indirectly, both the organization of the activities in which the artifacts were used and the pattern of refuse disposal. The mapping and excavation of features provide several types of spatial data. The locations of buildings, fences, wells, privies, ditches, and other permanent structures can be determined directly. Also, the refuse deposits found in features provide further information about the location of activities and the pattern of trash disposal. The fullest understanding of the landscape of the site is derived from combining these two dimensions of spatial data.

The study of land-use patterns is closely related to issues of archaeological site formation. An understanding of past cultural activities must rest on at least a general understanding of the processes that formed the archaeological features and deposits used in analysis (Schiffer 1972, 1976, 1983, 1987). Objects can become deposited in the ground, and features formed, through a variety of different cultural and natural processes. In a plowed, unstratified site, such as the McKean/Cochran Farm, these questions are not as complicated as they are on urban sites, but they still must be addressed. For example, in the absence of stratigraphy it is often difficult to determine whether a series of post structures were in use at the same time or sequentially, and such indirect clues as the alignment of the structures and the quantity of artifacts in the posthole fill must be used to obtain an approximate result (Kelso 1984:56-79). Only after the chronology of the various features, structures, and fences has been determined can analysis of the landscape of the farm be carried out.

PLATE 7: Counting Artifacts from Feature 1, the Later Cellar, 1800-1830

3. *The Material Culture of the Eighteenth Century: A Revolution in Living Standards?*

During the excavation of the McKean/Cochran Farm, more than 38,000 historic artifacts and faunal specimens were recovered that could be used to study the material culture of the residents, and these artifacts have been made a major focus of the investigation (Plate 7). The material culture of a farm includes both items produced on the farm and items purchased by the residents. The archaeological record is biased toward purchased items, especially ceramics, glass, and metals, and the largest component of material culture studies in archaeology is therefore the study of consumer behavior. Archaeological studies focusing explicitly on consumer behavior have been common in the past two decades, and consumer behavior remains an issue of primary interest in historical archaeology (Gibb 1996; Carson 1994; Henry 1991; Klein 1991; Klein and Garrow 1984; Berger 1986a, 1990a, 1990b; Spencer-Wood 1987). Much of this research has focused on urban sites, but consumer behavior is an equally important issue in rural archaeology (Berger 1986b). We have learned from historical and archaeological study that none of the colonists in British America, neither the wealthiest plantation owner nor the wildest backwoodsman, was self-sufficient. Most settlers did not even produce all their own food, and only a few made all their own cloth and clothing (Bedell et al. 1994; Shammas 1990). Although historians disagree about the extent to which small farmers were

involved in the marketplace and the importance they placed on consumption, all of the colonists were in some sense consumers (Henretta 1978; Kulikoff 1989; Sellers 1991).

As defined by archaeologists, consumer behavior refers to the patterns of individual, household, or group expenditures, and specifically to the acquisition, use, and discard of material items (Wise 1984). This definition is narrower than that employed by other social scientists, who generally include expenses for such nonmaterial goods as charity and education (Henry 1991; Zimmerman 1936), but such expenses rarely leave any trace for archaeologists to uncover. What people buy, of course, reflects not only their material needs but their notions of beauty, proper behavior, the usefulness of technology, and their own status (Ferguson 1977; Meltzer 1981). Zimmerman (1936) has pointed out that values such as frugality and self-indulgence are closely related to consumption patterns. Purchasing patterns also reflect the economic world beyond the farm. Changes in the world economy, most importantly for this period the industrial revolution and the great increase in world trade, should lead to changes in the objects purchased, and those discarded in the ground, even at the houses of ordinary farmers (Larkin 1988).

Consumption and consumerism have also been used to divide historical periods. Some descriptions of twentieth-century American society emphasize that this is the consumer age, in which people express their identities primarily through consumption, and social classes and cultural groups can be defined by their different buying habits. If the great importance of consumption does differentiate contemporary society, it raises the question of when the consumer society originated, and whether the change was rapid or gradual. Historians have written a great deal on this question, and they have placed the origins of consumer society in the sixteenth century, the eighteenth century, the 1880s, and the 1920s (Shammas 1989). Behind these differences about the date of the change lie not only the typical historian's emphasis on the importance of his or her own period of study, but great divisions about what consumer society is, what it means for the people who live in it, and whether its development was good, bad, or indifferent for the world.

Most important for the study of the McKean/Cochran Farm is the large body of recent scholarship, summarized by Carson (1994), that points to the eighteenth century as the key period for development of modern consumer culture. According to this view, it was in the years between 1650 and 1800 that household objects such as dishes and furniture first became a key component of the average person's social status and self-definition. In traditional European society, these scholars argue, status was largely determined by a family's wealth in land and livestock, the value of which their neighbors all knew. By 1800, status was generally judged by a new definition of proper behavior that rested largely on a person's skill in using certain household objects. The tea ceremony and a new way of dining, around oval tables with forks and matching sets of dishes, are the best examples of this new relationship between status and household objects. The great importance attached to these rather simple things led to the culture of mass consumerism we live with today and sparked a demand for mass-produced goods that helped ignite the industrial revolution. This "consumer revolution" spread Georgian canons of order and beauty, derived from the classical revival in elite circles we usually call the Renaissance, to ordinary people, and their local artistic and

craft traditions were swamped by a tide of classically inspired, mass-produced, and internationally recognized fashion.

A related body of work, much of it deriving from Annapolis, Maryland, sees the changes in eighteenth-century personal habits as symptoms of a broad shift in western society toward a more disciplined way of life (Shackel 1993; Shackel and Little 1994). The material corollaries of this new discipline include not only dishes and tea sets, which represent a more meticulous way of eating, but clocks, which impose tight control on the use of time, scientific instruments, which represent the imposition of law on nature, formal gardens and grid street plans, which bring rigid order to the landscape, and toothbrushes and chamber pots, which represent the imposition of discipline on the body. Paul Shackel, one of the leading theorists of this school, explicitly relates his ideas to Michel Foucault's work on prisons, which, according to Foucault, represent an attempt to impose a discipline favorable to the upper class on the criminal elements and the poor (Foucault 1978). We are thus led to imagine that the 1650 to 1800 period saw a great change in the western world, from a rather lax medieval society in which work was task-oriented, table manners atrocious, towns random in form, and criminals out of control, to a tightly disciplined modern society governed by the police, the clock, the surveyor's sextant, and the etiquette book. It is interesting to note that while Carson and Shackel both believe that the cultures of the rich and poor grew closer together in the eighteenth century, Carson sees this as evidence that the poor were striving to imitate the rich as best they could, while Shackel believes that the rich were forcing the poor to behave in ways useful to their betters.

Substantial claims are made for the importance of changes in consumption in the 1650 to 1800 period. On the one hand, these changes reflect a major shift in the way people conceived of their society, related to their neighbors, learned how to do their work, even thought about their bodily functions; on the other hand, these changes caused yet further developments, most importantly the industrial revolution. The claims, if correct, therefore seem to justify the notion of a "consumer revolution" in the eighteenth century. But a close evaluation of these claims suggests that they cannot be accepted uncritically. Examined in the wider context of Western history, the rise of consumerism and personal discipline are but parts of much broader social changes that took centuries to develop.

The main theorists under discussion here, Carson (1994) and Shackel (1993; Shackel and Little 1994), both tend to isolate the changes in eighteenth-century consumption from other changes in the society and to assign prominence to consumer behavior even when other factors have traditionally been seen as more important. Neither of these writers say much about the Renaissance, which seems a striking omission in works about the transformation of early modern Europe. If, as Carson maintains, the visible marks of status ceased to be lands and jewels and came to be a refined way of behaving, the classical education emphasized by humanist intellectuals is surely one of the most important parts of that new code, and the rise of the university education as a marker of gentility deserves mention alongside furniture and table manners (Bush 1939; Elias 1978). New standards of taste, which led to the redesign of houses and furniture, were also inspired by Renaissance classicism, and grid street plans were copied from Roman models. The introduction of the

Renaissance to the discussion takes us back to the fourteenth century, greatly stretching the time frame of these "revolutionary" changes.

Social discipline has long been one of the major themes of Renaissance historians, and Shackel has only scratched the surface of this vast topic. The Protestant Reformation has often been seen as a quest for a disciplined church, especially as practiced by John Calvin, John Knox, and their Puritan followers (McNeill 1967; Schilling 1981; Strauss 1980). The modern army, with its uniforms, matched weaponry, system of rank, and regular drill, was an invention of this period, developed by men who wanted to recreate an ancient Roman or Spartan standard of military discipline (Oestreich 1982). The stoics, the ancient philosophers who emphasized personal discipline over all else, were widely read and quoted in this period (Allen 1957). Modern athletics, which can be seen as another way of disciplining the body, also developed greatly in this period, often under the influence of classical models. These issues take us from Martin Luther's Ninety-five Theses (1519) to the renewal of the Olympics (1896), again greatly stretching the time frame of the revolution.

Carson also asserts that the "consumer revolution" led to a great rise in demand for consumer goods and therefore caused the industrial revolution, but this equation suffers from a mismatch between the commodities important to the two developments. The objects Carson emphasizes are houses, furniture, dishes, and cutlery. Although the form of houses and furniture certainly changed in the 1650 to 1800 period, the way they were made, by hand labor with simple tools, did not. The manufacture of ceramic dishes and cutlery was transformed by factory techniques, but these items represent such small segments of the eighteenth-century economy that it is hard to see how they could have had a revolutionary economic impact. The key industries of the eighteenth century were cloth manufacture and iron and steel production (Hartwell 1968; Mathias 1988). Carson's model actually asserts that cloth and clothing became less important status markers at this time, and we know that iron and steel production was much more closely related to military needs than to consumer demand. Carson's evidence that ordinary people became more interested in the acquisition of consumer goods like those of the rich comes from sermons and other moralizing tracts complaining about the "uppity" behavior of the poor, who didn't know their place as they used to. Since examples of such moralizing could be produced in numbers beyond counting for every period of European history, these texts are actually evidence only of their authors' traditional moral bent and tell us nothing at all about eighteenth-century behavior (Delumeau 1977; Owst 1961; Strauss 1978). Again, it seems more appropriate to see both changes in consumption and the new style of manufacturing as deriving from intellectual changes begun in the Renaissance.

Nor is it clear that, as Carson asserts, consumer goods did not play a great part in defining social groups before 1650. Medieval people did not use forks or teacups, but they were very conscious of how people used other possessions. Knowing how to ride a horse, for example, was a key element of aristocratic behavior. (It remained so in eighteenth-century America.) And if one objects to use of the horse as an example, on the grounds that it is not a manufactured good, what about a sword? Every medieval gentleman (outside the church) had to own a sword, and his status was judged in part by the style with which he used it. There is certainly a difference between knowing how to ride a horse or use a sword and knowing how to make tea elegantly, but the difference does not lie in the

importance of properly using manufactured goods, which is essential in both systems. As for refined manners, Europeans had believed from at least the time of the Iliad and the earliest Irish sagas that an aristocrat could be recognized by his behavior no matter how far from home he went, even by people who had no idea of the amount of land he owned. The "courtly love" of the twelfth and thirteenth centuries has frequently been seen as a code of behavior that separated the aristocracy from everyone else, since only the aristocrats had the time to learn the complex rules of courtly romance (Elias 1978).

Questions have also been raised about the degree of change that actually took place in the eighteenth century, and many scholars see strong expressions of traditional attitudes well into the nineteenth century. Traditional rural patterns of neighborhood sharing, as expressed in communal activities such as barn raisings and quilting bees, interest-free loans between neighbors, and simple barter exchanges like meat clubs, remained common in the nineteenth century, suggesting that market attitudes and the desire to acquire consumer goods remained second to neighborliness for many people (Henretta 1978; Martin 1984). Amy Friedlander (1991) has shown that in early nineteenth-century New Jersey most farmers continued to use their wealth in a way Carson calls traditional, preferring investment in bigger barns and more livestock over the purchase of consumer goods. Edward Chappell (1994) believes that there was no great change in American housing until after 1800, and traditional building forms remained common in some parts of North American into this century (Glassie 1968; Noble 1984). Studies of bones from archaeological sites suggest that traditional dietary patterns remained entrenched in rural areas in the nineteenth century (Bedell et al. 1994). The recognition that many traditional lifeways endured into the nineteenth century, and that many of the undoubted developments of the eighteenth century were rooted in the Renaissance and the Reformation, turns the "consumer revolution" into a 500-year-long event, and the important changes in the ways eighteenth-century people ate and drank were part of a very slow process, not signs of a sudden social transformation.

The debate about whether there was a rise in consumerism and, if so, whether it was gradual or rapid, sets a clear agenda for archaeological and historical research. If we can identify a period of less than 50 years when great changes took place in the ownership of several different classes of goods—for example, tea sets, forks, chests of drawers, and improved houses—we could plausibly point to that period as one of consumer revolution. If, on the other hand, we find that these changes were gradual, or that rapid changes in the ownership of different consumer goods took place at different periods spread out over centuries, we could argue for slow change. Also, if new consumer goods spread at the same time among different ethnic groups in different parts of colonial North America, we could argue for the existence of a single market and a single culture. However, if different groups experienced these changes at widely different times, or if some groups did not experience them at all, then we must allow that the reach of Anglo-American commercial culture was limited, and that traditional ethnic and community values continued to be of major importance. Obviously, archaeology is not the only way to approach these questions, but it certainly has a part to play in understanding consumerism and its role in the origin of the modern world.

4. *Culture and Environment*

The relationship between culture and environment has always been prominent in the study of American history. People have long wondered how much of the culture the early European immigrants to America brought from home was maintained in the New World, and how much the immigrants changed their ways to adapt to their new surroundings. The debate surrounding this question continues today (Bailyn 1986; Carson 1994; Fischer 1989; Greene 1988; Mouer 1993).

To study the relationship between culture and environment was not part of the original research design for the McKean/Cochran Farm. It was discoveries made in the field, especially a peculiar dairy building, that raised this question. Although this topic was introduced late into the research program, it has become central to the research. The Odessa area makes a fascinating laboratory for the study of this relationship, because although it is topographically very similar to the Chesapeake region, it is culturally much closer to Pennsylvania (Glassie 1968).

5. *Culture History*

The end goal of the research at the McKean/Cochran Farm has been to increase our knowledge about the past. The information we have discovered is both particular, relating to one farm and the families that occupied it during a few decades, and general, relating to the overall pattern of culture and culture change in America. Our detailed studies of the McKean/Cochran Farm, including its layout, the architecture of its buildings, and the material culture and diet of its residents, have provided data that are interesting in themselves, comprising an intense, micro-study of a particular farm. Yet these data gain greater importance when related to broader developments in American history. By combining the intense study of this farm with information from documentary research, material culture studies, architectural history, and the excavations of other similar sites in the region (e.g., Catts et al. 1989, 1995; Coleman et al. 1984, 1990; Grettler et al. 1995; Shaffer et al. 1988; Thomas et al. 1994), we have tried both to develop a picture of the lives of the inhabitants and to explore the relationship between their lives and the world they lived in. What impact did broad economic, social, and cultural changes have on the lives of these people? How were the ideas and ideologies of these people reflected in the ways they built, ate, farmed, and shopped?

A question of particular importance in this project has been the way we divide the Americans of past centuries. Much current research, especially among political liberals, focuses on the variables of race, class, gender, and ethnicity, which have now been incorporated into the National Park Service's "Thematic Framework for History and Prehistory" (Little 1997). However, people can be grouped for consideration in many other ways as well. Work on consumer habits emphasizes the difference between rural and urban residents, who had very different buying patterns in the eighteenth century (Carson 1994:608-609; Walsh 1983; Weatherhill 1988:70-90). Regional cultures play a great part in the work of many folklorists, and it appears from work at the McKean/Cochran Farm that its residents, wealthy people of British descent, acted differently, in many ways, from wealthy people of British descent in the Chesapeake region. Time also served to divide people. This was true not only absolutely—people of the same class, ethnicity, and gender lived quite differently in 1830 than

they did in 1750—but also in terms of how long a particular area had been settled and how long a family had lived on a particular farm. The wealthy Cochran family lived in a rather small, simple house for at least their first decade or two at the McKean/Cochran Farm, constructing grander dwellings only when they had made sufficient capital investment in their farm. Comparisons between different groups of people, however divided, have validity only if the time variables are carefully controlled.

With these questions in mind, we turn to the excavation of the McKean/Cochran Farm Site and the discoveries in the ground that have helped us to answer them.

IV. SUMMARY OF FIELDWORK

The excavation of the McKean/Cochran Farm began in early December 1995. The excavation plan called for three stages of work. The first stage was the hand excavation of a sample of the plowzone, the top foot or so of soil that had been disturbed by plowing. In the second stage, the remainder of the plowzone on the site was removed using a backhoe with a smooth bucket. The soil was carried off the site by a dump truck. Finally, the cellars, wells, and other cultural features uncovered were dug by hand. The plan for feature excavation was refined at field meetings attended by representatives of DelDOT and the Delaware SHPO after the plowzone stripping and initial sampling of the features.

A. PLOWZONE SAMPLING

The first stage of the fieldwork was the excavation of a sample of plowzone across the core of the farm site. We had several reasons for wanting to sample the artifacts from this disturbed soil. Objects that have been intentionally dumped sometimes end up in deep pits that survive plowing, but any objects that were simply lost on the ground would have been plowed up and incorporated into the plowzone. Objects that have been accidentally lost are often different from those that have been thrown away; for example, although one hardly ever finds coins in trash dumps, they are regularly lost. Therefore, only by excavating part of the plowzone can one get a truly representative sample of the material things used on a site that has been plowed. Excavation of the plowzone can also sometimes tell us what was being done on various parts of the farm, by showing what was dropped there. The site measured about 35,000 square feet, or 2,800 square meters. Within this area 151 1x1-meter units were excavated, comprising 1,625 square feet, about 5.4 percent of the site (Figure 7). A total of 20,404 artifacts were recovered during the Phase II and III plowzone sampling—7,528 artifacts excluding the 12,876 brick fragments which were counted and then thrown back.

B. PLOWZONE STRIPPING

When we started work in December 1995, the weather was not bad, and we made quick progress on the first stage. Square excavation units were placed across the hill, gradually extending the grid pattern and gradually exposing more of the site. During the unit excavations we found more features, including a second cellar hole and several postholes. The next stage of work was the removal of the rest of the plowzone from the site using a backhoe with a smooth bucket, and we were looking forward to this stripping, sure that many more features would be exposed. The backhoe and dump truck arrived on the site on December 11. We got in one good day of work, but that night it rained, and the already slippery ground turned to mud. When we tried to resume work the next day, the dump truck could not move, and the backhoe was leaving such deep tire ruts that we feared it would damage the features below the plowzone. Fortunately, DelDOT had revised their construction schedule, and we were able to put off the work until the following spring.

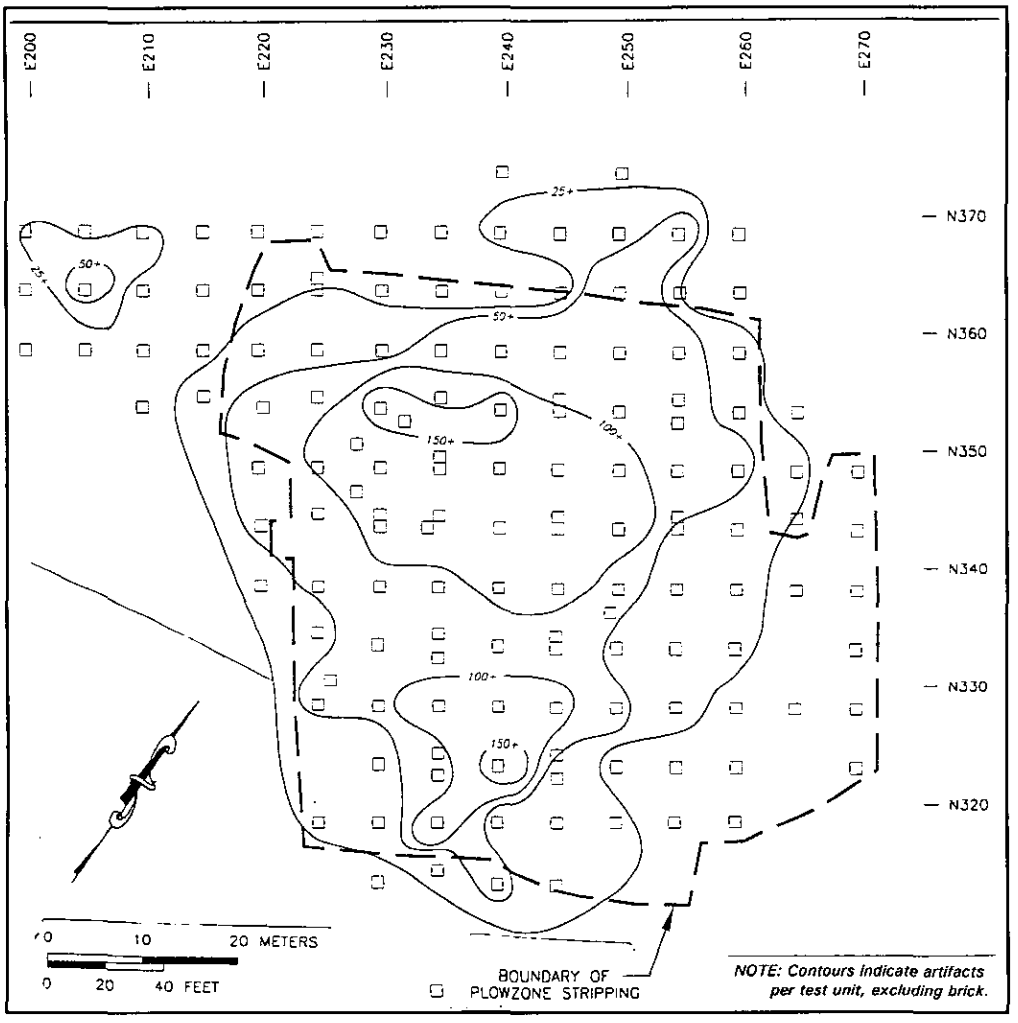

FIGURE 7: Plan of Plowzone Sampling

When we returned to the site on May 8, 1996, we found it essentially unharmed by the winter, and scheduled a backhoe and dump truck for the next day. Our hopes were high. We knew that interesting things would be found as soon as we could uncover large areas of the site. But that night it rained torrents, forcing yet another delay, and we could not begin machine work until May 14. These first rains were our introduction to the summer, one of the wettest on record in Delaware. When the backhoe work started, in the southwest corner of the site, we began to make discoveries immediately. First we uncovered Feature 4, which appeared as a large rectangle of multicolored clay; we now know that this was the cellar hole of the first house on the site. Feature 29, a well, appeared as a round pit with bones and large potsherds visible on the surface. Not far away we found the stone wall of Feature 15, the dairy, and a circular area of brown soil that turned out to be another well, Feature 27. On the first day we had uncovered two buildings and two wells, and we could tell from looking at these features that they would be full of artifacts. The area we eventually stripped covered approximately 22,600 square feet or 2,100 square meters, and within this area we exposed more than 100 features. To prevent the bare soil from eroding into the river, we surrounded the site with silt fencing, and to protect the features, we covered them with large sheets of black

PLATE 8: Mapping the Site

plastic. A grid of points at 5-meter intervals was then laid out across the site using a surveyor's transit, and these points were used to prepare a detailed map of all the features (Plate 8).

C. FEATURE EXCAVATION

After the plowzone had been removed, more than 100 features were identified on the site, most of them small fence postholes or small unidentified pits. Six large features were present, two wells and four cellar holes, all of which were extensively excavated (Figure 8). Feature excavation went on through May and June and into July, the weather growing ever hotter despite the frequent, heavy rains. By the end of the project we had worked on the site in all seasons, and we learned that its exposed, commanding location had some distinct disadvantages. The view was wonderful, but the hilltop was swept by harsh winds in the winter and baked by the summer sun.

The features seemed to be grouped within two distinct time periods. Two cellar holes, Features 2 and 4, and one well, Feature 29, seemed to date to the earlier stage, in the eighteenth century. A third cellar hole, Feature 1; a second well, Feature 27; and a dairy building, Feature 15, seemed to date to the later stage, approximately 1800 to 1830. The date of two barns, Structures A and B, was

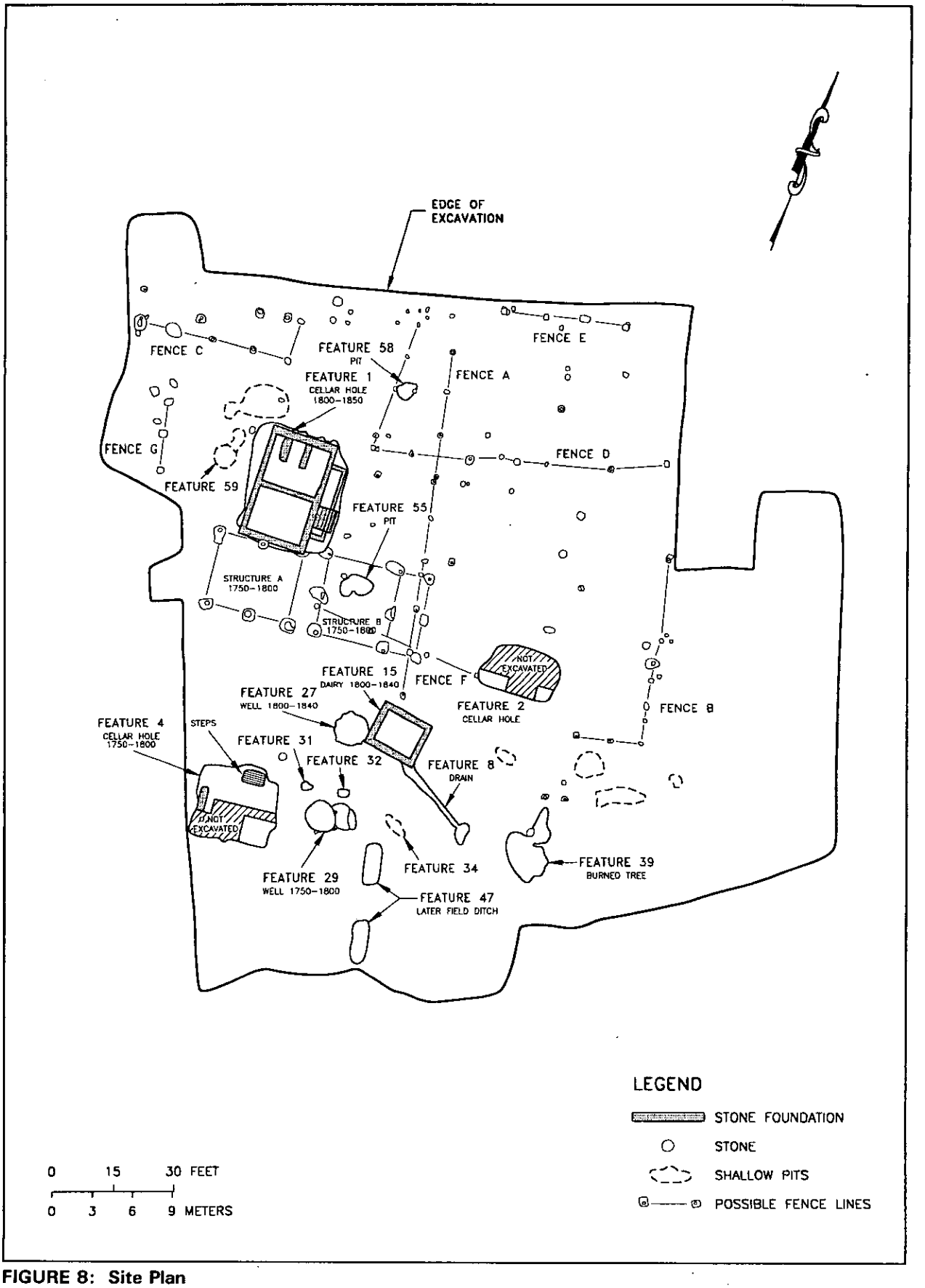

FIGURE 8: Site Plan

not clear at first, but it now appears that both were part of the earlier stage. The dairy, Feature 15, seems to have remained in use after the houses on the site had been abandoned. If so, the site may have continued to serve as a farm work area after the Cochran family had moved their residence to another house a few hundred yards away.

Feature excavation began with testing of the larger features to determine their nature and decide whether complete or partial excavation would be required. For the four large cellar holes on the site, testing was carried out by the placement of units, usually measuring 2x2 meters, in one corner of the feature. Smaller features were tested by the excavation of a quadrant or a half. Features were excavated by strata, and all excavated soil was screened through ¼-inch mesh to recover artifacts. Two-liter soil samples for flotation were taken from each stratum that appeared likely to contain organic remains. After testing, discussions were held with representatives of DelDOT and the Delaware SHPO to agree on an excavation plan. Some features, including Feature 1, the large cellar hole, were completely excavated, while in other features no further work was done. In all, more than 22,000 artifacts and 9,000 faunal specimens (bones) were recovered during the feature excavation. Careful drawings and plans were made of all features (see Plate 6) and all were photographed before, during, and after excavation.

1. Feature 2, Small Cellar

Feature 2 was a small cellar hole, measuring 18 by 12 feet (5.5 by 3.7 meters), in the approximate center of the site. Two units were excavated in this cellar (Figure 9). Unit 1, which measured 1x2 meters, was placed in the southwest corner of the feature, over what appeared to be a bulkhead entrance. Unit 2, which measured 1x1 meter, was placed in the southeast corner of the feature. The main fill in Feature 2 consisted of mixed clay, loam, and sand closely resembling the surrounding subsoil. This soil was clearly "redeposited," which means that it had been dug up and then dumped into the hole, rather than washing in naturally. On the floor of the feature in Unit 2 was a thin layer of sand that did appear to have been washed in, possibly during a single rainstorm. Beneath the main fill in Unit 1 was a second stratum that also appeared to have been excavated and redeposited, but which was different from the main fill in that it contained more loam. This stratum contained more artifacts, including 41 sherds of delftware and more than 20 bone fragments. An intact hoe blade was found in the floor of the cellar, stuck into the subsoil. The feature had the appearance of a large posthole, that is, it appeared that immediately after it was excavated the soil that had been dug out was put back in.

The south and east sides of the cellar were nearly vertical, like cellar walls. The floor of the cellar was about 4 feet below the bottom of the plowzone in Unit 2 and the deepest part of Unit 1, which is about the right depth for a cellar. Unit 1 was placed over what appeared to be a bulkhead entrance on the west side, and this side of the cellar was sloping, rather than straight like the other sides (see Figure 9). However, there was no clear sign of steps. In the southwest corner of the cellar, in Unit 1, a small rectangular hole measuring about 12x10 inches had been dug 6 inches into the floor. The fill inside the hole was the same as in the feature above. This hole could have been dug to hold an

interior post, but there was no evidence that such a post had ever been installed. Nor was any other evidence of foundations found in the cellar.

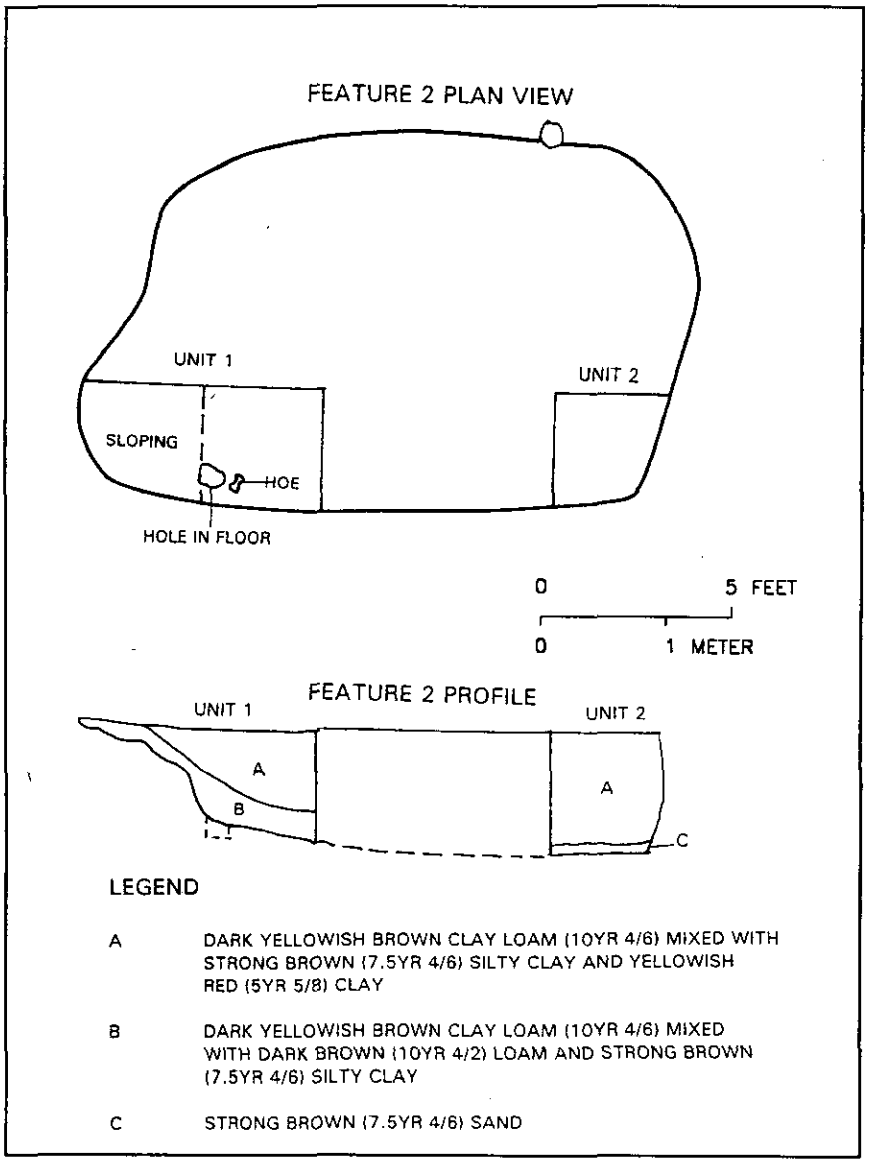

FIGURE 9: Plan and Profile of Feature 2, a Small Cellar

The simplest interpretation of this peculiar feature is that it was abandoned without ever having been finished. Either because of some catastrophic event, such as the death of the builder, or because the builders simply changed their minds, they gave up on the cellar before they had finished digging it. It stood open long enough for a storm to wash in some sand, and then the builders shoveled the dirt back. The only indication that it may ever have been completed was a fence line running off the southwest corner of the cellar (Fence F), but that is hardly conclusive evidence.

Whatever the history of the cellar, the artifacts recovered suggest that it was used early in the history of the site. The only ceramics found were delftware, an eighteenth-century type, and the hoe blade was what Egloff (1980) calls "Type 2," which also dates to the eighteenth century. If the hole had been dug later in the history of the site—say, after 1800—some sherds of creamware or pearlware would surely have been lying around on the ground, and they would have become mixed into the feature fill.

2. Feature 4, Cellar, 1750 to 1800

Feature 4 was a cellar 3 feet deep, 19 feet long, and 17 feet wide (5.8 by 5.2 meters), probably the basement of the earliest house on the site (Figure 10). One short section of stone wall foundation

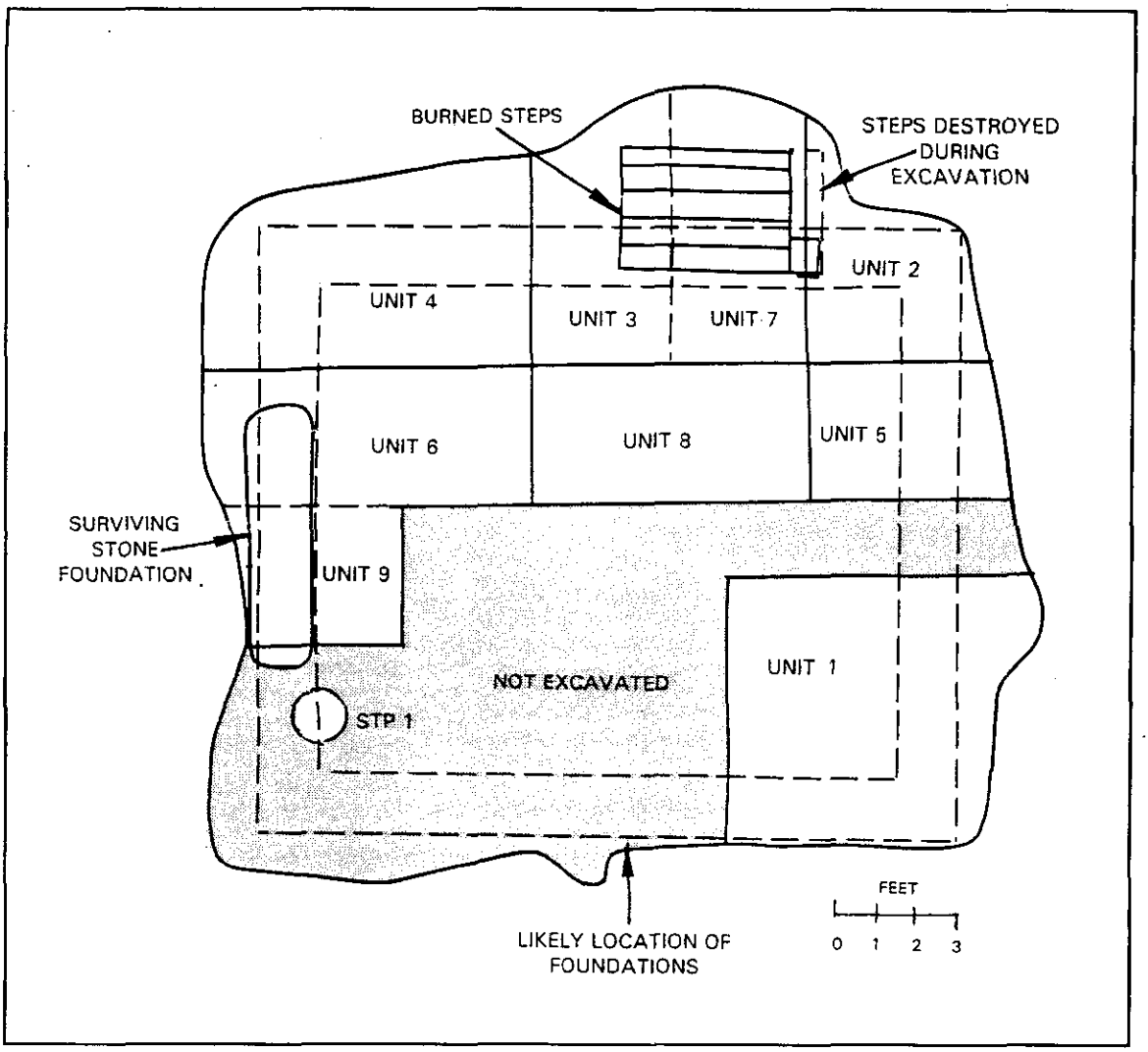

FIGURE 10: Plan of Feature 4, Cellar of the Earlier House, 1750-1800

survived in the cellar. This section, along the west side of the cellar, was 6 feet long and 18 inches thick. It was constructed of large stone cobbles bonded with sand mortar. The remainder of the foundation must have been completely "robbed," that is, salvaged, to be used in the construction of either the later house represented by Feature 1 or the dairy, Feature 15. The most interesting architectural feature in the cellar was the bulkhead entrance, located in the north wall, slightly east of center (Figure 11; Plate 9). (A bulkhead entrance gives access to the cellar from outside the house; it typically has doors lying horizontal on the ground.) The bulkhead steps were wooden, and they appear to have burned in place, leaving dense black ash deposits marking the locations of all the boards. Five steps were preserved, rising to a height of 2 feet above the cellar floor. If, as seems likely, this house once had a complete basement, the upper 2 to 3 feet of the steps had disappeared. The steps were about 5 feet wide. The presence of the boards was not recognized when they were first encountered, so the easternmost foot of the steps was destroyed during excavation. The remainder was sufficiently sturdy to be completely exposed and photographed. The upper steps rested on subsoil, into which the form of the steps had been cut. The lowest step rested on a row of

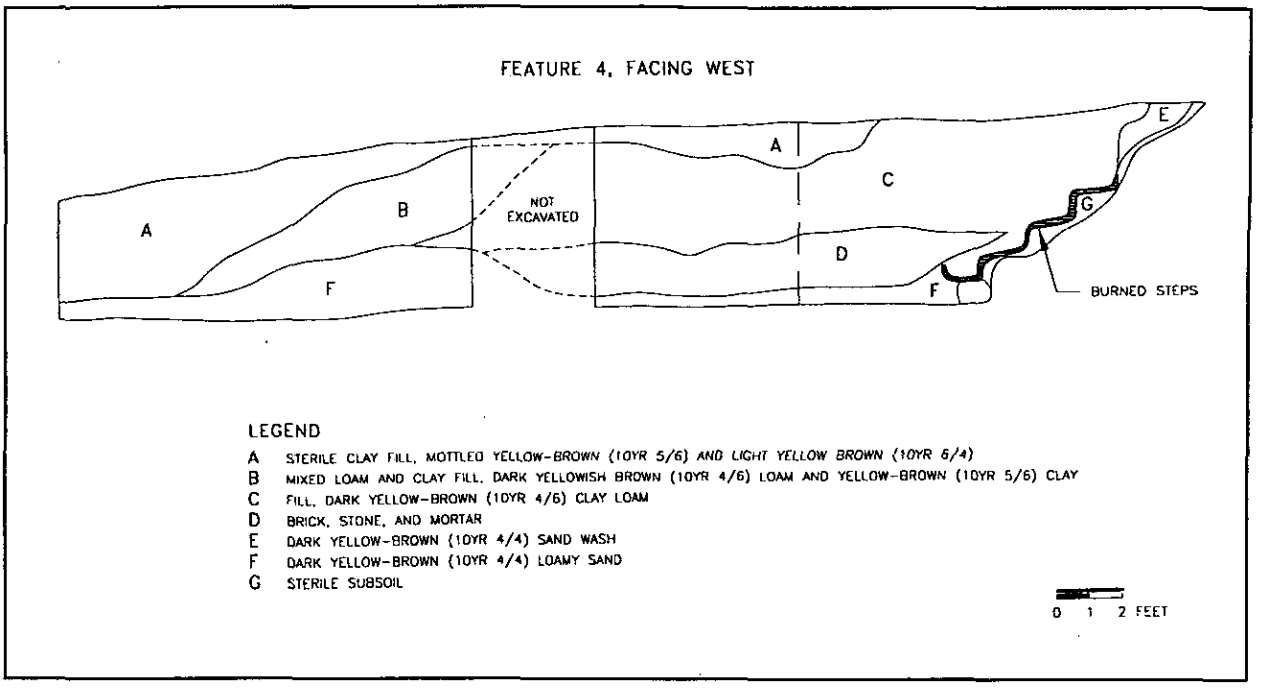

FIGURE 11: Profile of Feature 4, Cellar of the Earlier House, 1750-1800

small stones. Based on the position of the steps and the surviving wall, the house foundations probably measured 18 by 15 feet.

The first house was situated at the southwestern corner of the site, where the slope was steepest, just east of the ravine that formed the western boundary of the site. This ravine, more than 4 feet deep, serves as a reminder of how much damage had been done to the site by erosion. Thick deposits of washed-down soil in the field below the ravine, more than 50 yards from the site, yielded substantial numbers of artifacts, but hardly any artifacts were recovered from shovel tests dug in the ravine itself. The ravine was probably not there at all while the site was occupied, and if it was present, it must have been much smaller. It may even have begun as a road leading from the site down to the river a hundred yards away. Because of careless farming—the old plow scars on the site run straight up and down the slope—rain washed this part of the site away, leaving a great gully where part of the farmyard had once been. The artifacts that had lain on the surface next to the house were carried down into the lower field.

The extent of damage by plowing and erosion in this part of the site was also apparent in the profile of the cellar. After removal of the plowzone, which was less than a foot deep in this area, the cellar was only 3 feet deep at the northern, upslope end and 2 feet deep at the southern end. The floor was nearly flat. If the cellar was originally 4 feet deep, a typical depth for an English basement (leaving 2 to 3 feet of the cellar above ground), then nearly 40 percent of the cellar fill had been destroyed, which is important to keep in mind in the discussion of what remained.

PLATE 9: Feature 4, the Early Cellar, 1750-1800, Overall View Showing Storm Damage

Nine units were excavated in the early cellar, comprising about 70 percent of its total area. Because the southern half of the cellar contained no foundations and was largely filled with nearly sterile mixed soils, it was only partially excavated. (After the discovery of the surviving wall, the unexcavated portion of the feature was extensively probed with a pointed steel bar.) Excavation Unit 1, which measured 2x2 meters, was placed in the southeast corner of the feature; this unit yielded so few artifacts that a third of the soil was discarded without screening. The crew, worn out from digging the hard, nearly sterile clay, was ready to give up on the feature after that first unit, but one should never judge a cellar hole on the finds from only one corner. ExcavationUnit 2, which measured 1x1.4 meters, was therefore placed in the northeast corner to investigate a protrusion on the north wall that turned out to be the bulkhead entrance. Unit 2 contained many more artifacts than Unit 1, and Unit 3, on the other side of the bulkhead, produced even more. Because of the interesting remains of the bulkhead steps, and because Unit 2 contained so many more artifacts than Unit 1, further work was focused on the north end of the feature. The number of artifacts recovered declined as one moved away from the stairs. Plate 10 shows the cellar after the completion of the excavation. We spent hours cleaning the feature and straightening the walls of the excavation for this photograph, but when we were just about finished the sky opened up and we and the cellar were drenched by a brief but torrential rain, leaving puddles everywhere and undoing much of our work. It rained for the next two days, and these heavy rains caused large sections of the feature wall to cave in, so this was the best photograph we ever got.

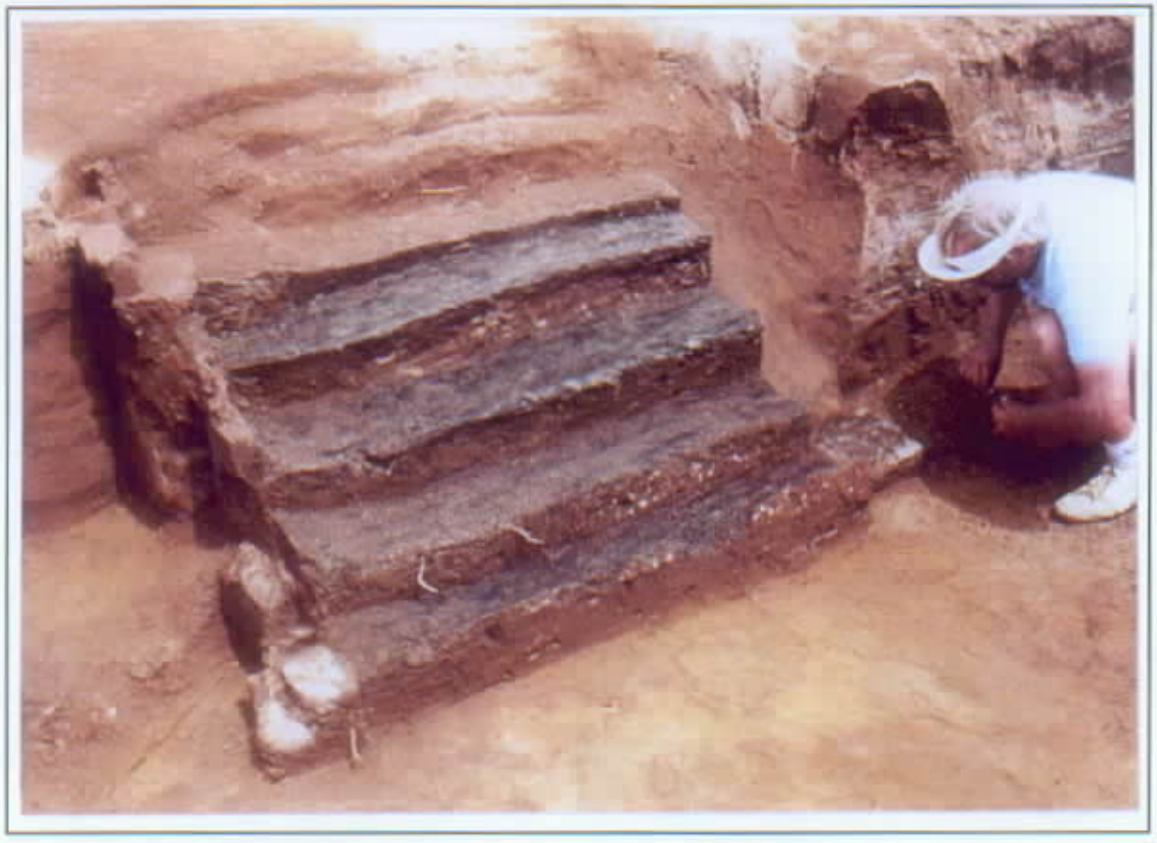

PLATE 10: Burned Steps in Feature 4, the Early Cellar, 1750-1800

PLATE 11: Profile of Feature 29, the Early Well, Filled Around 1800

Natural deposits of soil washed in by the rain, recognizable by their similarity to those that formed in our excavations after each storm, were found only in the very bottom of the cellar, showing that it had been intentionally filled in. Five main strata or layers of fill were present. The uppermost stratum, and therefore the last deposited, was present only in the southern two-thirds of the feature, and it was much deeper at the southern end than further north. This stratum (Stratum A) was a mixture of different colored clays, almost completely sterile. This soil must have been dug out of a hole somewhere else on the site, probably the cellar of the new house (Feature 1) or the new well (Feature 27). Stratum A was 18 inches deep in the southern end of the cellar and generally less than 8 inches thick elsewhere. Beneath Stratum A in the southern half of the feature was Stratum B, which was very similar except that it contained more loam and a few more artifacts. It, too, had been dug out of another hole, but it was from closer to the surface and therefore included some of the topsoil. Stratum C, which was beneath Strata A and B in the center of the cellar, was the top stratum at the northern end and was not present at all at the southern end. This stratum was a dark yellowish brown clay loam, and it contained ash, oyster shell, and many artifacts. The artifacts were judged to date to the eighteenth century, since they included creamware, delftware, comb slipware, and Westerwald blue and gray stoneware but only two small pieces of pearlware (post-1775), and they included several unusual items, such as a chain and locket, a fragment of a mirror, and three ivory fan blades.

Beneath Stratum C in the northern half of the cellar was a dense deposit of rubble, designated Stratum D. The rubble consisted mostly of brick and sand mortar, with some nails, window glass, and fragments of stone and a few artifacts. In Unit 5, near the northeastern corner of the cellar, this stratum contained substantial pieces of burned boards. This stratum appeared to have derived from the destruction of the early house. Apparently, what was left of the structure after the usable stones and bricks had been salvaged was dumped into the cellar hole. The presence of so many bricks suggests that the chimney of the house was at least partly brick. (It was common to build chimneys with stone up to the level of the eaves and with brick above that level.) The burned boards in the fill, along with the burned steps, suggest that the house was destroyed by fire. The identifiable nails in this stratum were all handwrought. (Nail-making machines were introduced around 1790, and machine-cut nails are common after 1800.)

The bottom layer in the cellar, Stratum F, consisted of sand that had washed into the cellar. In the northwest corner of the cellar, in Excavation Unit 4, layers of this sand were also found higher up, between layers of rubble and fill. This washed-in soil shows that the cellar stood open for some time before it was completely filled in. Since no artifacts were found in the bottom of the cellar, it appears that the house was empty when it burned. It had probably been abandoned for some time, and it may even have been intentionally burned, which was sometimes done to make removal of nails and other hardware easier.

3. Feature 29, Well, 1750 to 1800

Feature 29 was a well located 7 feet east of Feature 4, the cellar of the earlier house, and it was probably also part of the earliest phase of occupation. On the surface the well was about 7 feet

across, but it had been widened somewhat by erosion, and it appears that the well shaft was originally about 5 feet in diameter. The only evidence of lining in the well was a thin dark stain around the edge in some places, probably indicating that it was originally lined with wood. Postholes on the south and east sides of the well showed that it had been covered by a wooden structure. The well was excavated to a depth of 8 feet below the base of the plowzone. The top 4 feet of fill in the well consisted of three strata of rich, loamy soil mixed with ash, oyster shell, bone, and numerous artifacts, a typical household trash deposit (Figure 12; Plate 11). This deposit contained many interesting artifacts, including a brass candle holder and large, mendable pieces of many ceramic vessels. Because of the ash and oyster shell, which create an alkaline environment, preservation of bone was excellent, and numerous tiny fish bones and fish scales were recovered. Samples for flotation were taken from all of these strata in the hope of recovering plant remains and even smaller bones.

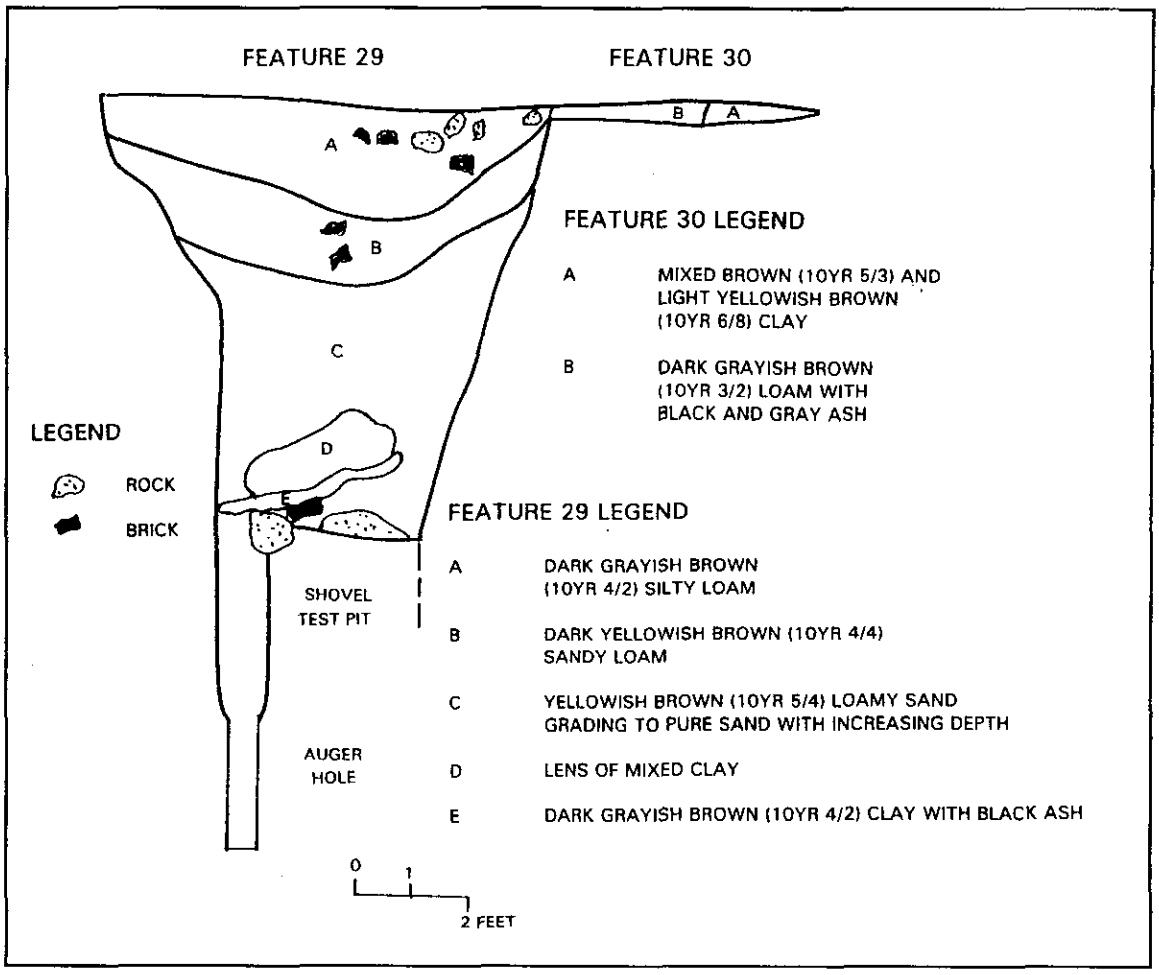

FIGURE 12: Profile of Features 29 and 30, Well (1750-1800) and Associated Pit

For reasons of safety, excavation of a small space such as a well cannot be continued past a depth of 4 feet without installing shoring or stepping out the sides. Since the well was still yielding artifacts at the depth of 4 feet, a backhoe was used to expand the hole to permit deeper excavation.

The well was then excavated to a depth of 8 feet. This portion of the well yielded few artifacts, and by the bottom the fill had turned to nearly sterile sand. This fill was tested with an auger to a depth of 12 feet, and all of the soil in the auger hole was sterile sand. Excavation of the well was therefore abandoned.

It sometimes surprises people to learn that wells, which required so much effort to dig, were commonly used as trash pits. In the days before steel pipe and concrete culverts, however, wells were never expected to last forever, and wood-lined wells had particularly short life expectancies. The lining at the bottom rotted—even brick, which was not nearly as hard in the eighteenth century as it is today, rotted when it lay in the water—the bottom of the well started to silt up or even collapse, and after a certain point it was cheaper and safer to dig a new well than to keep trying to repair the old one. An abandoned well was both a safety hazard and a perfect place to throw trash, so most abandoned wells were soon filled.

4. Feature 30, Pit Adjacent to the Early Well

Feature 30 was a shallow pit adjacent to Feature 29, the earlier well. The oblong pit measured about 7 feet by 3 feet 6 inches and was 6 inches deep. The feature contained two layers of soil. The fill in the eastern half, away from the well, was a layer of redeposited mixed clay that was designated Stratum A. In the western half was a layer of very dark brown clay loam mixed with large amounts of gray ash, apparently a deposit of hearth sweepings, designated Stratum B. Excavation showed that Stratum B was actually on top of Stratum A, although the line between them was not far from vertical. Both the well itself and the postholes associated with it appeared to cut through Feature 30, so it seems that this pit had been filled in before the well was dug. Feature 30 thus appeared to contain one of the oldest deposits on the site. The artifacts recovered all dated to the eighteenth century, including sherds of redware and faience or delftware, wine bottle glass, and a handwrought nail. Feature 30 may have been a hole left by the removal of a stump in the ground being cleared for the house, or a pit dug to obtain clay for brick making.

5. Feature 15, Dairy, 1800 to 1840

Feature 15 was a dairy of very interesting design (Figure 13; Plate 12). Dairy products, especially butter and cheese, were a vital part of the northern European diet, more important to poorer people than meat. Dairying was therefore a major part of farm life. In New Castle County, dairying had by 1800 developed into a commercial industry, and butter from farms was sold to town dwellers in Philadelphia and Wilmington. Dairying was primarily women's work, from milking the cows to packing the final product. On some farms it seems that the sale of butter earned up to half of the cash income, so the contribution women made to the household economy was a very important one (Jensen 1986). The processing of milk took place in a dairy or buttery, which could be either a separate building or a room attached to a house. The dairy had to be cool, because the milk had to be kept from spoiling for the 36 hours it took for the cream to separate. The dairy at the McKean/Cochran Farm was a separate structure measuring 11 by 13 feet. This building was completely excavated. It had stone foundations and was constructed like a springhouse, a common

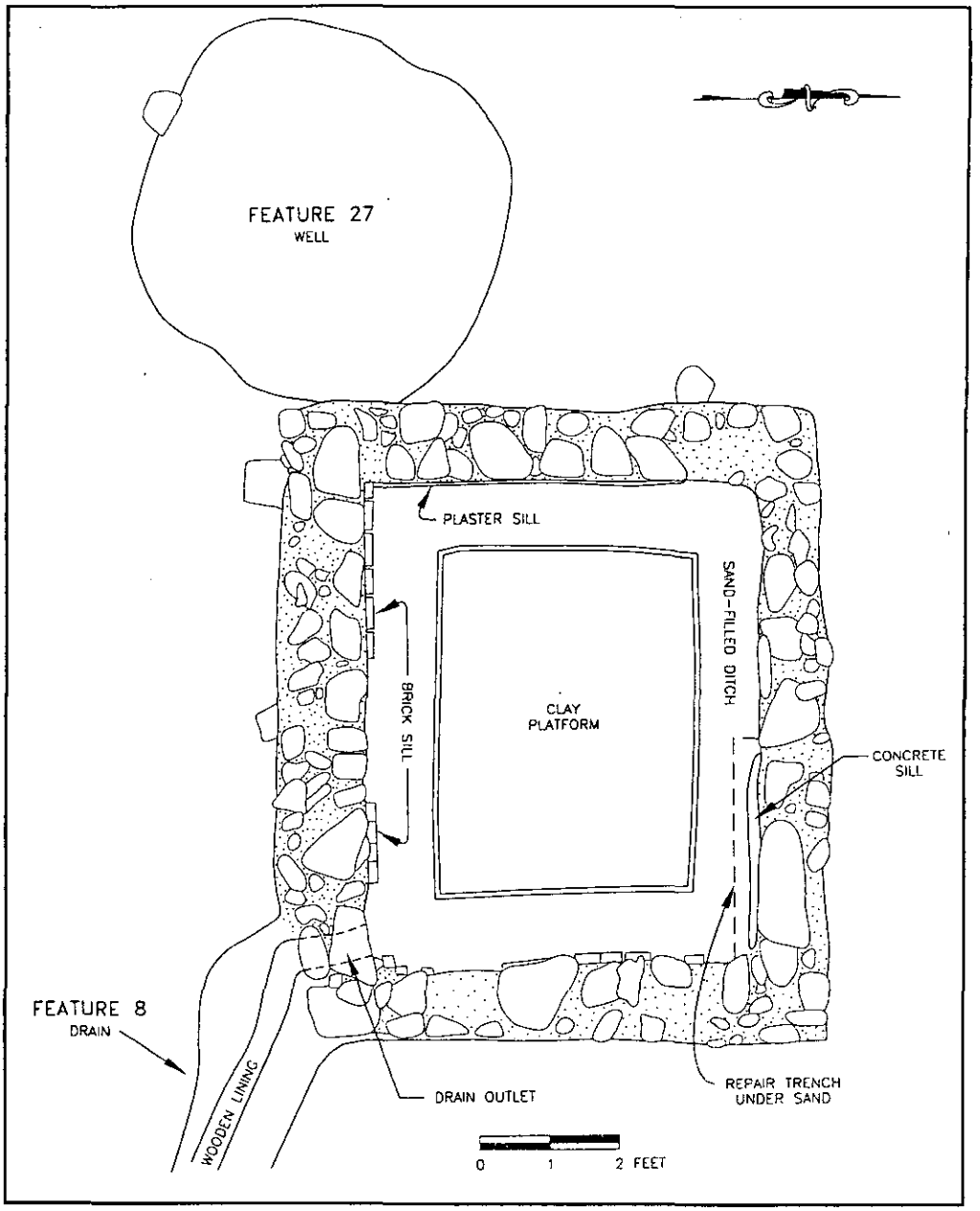

FIGURE 13: Plan of the Dairy (Feature 15), the Drain (Feature 8), and the Later Well (Feature 27), 1800-1840

form of dairy building in Europe and in Pennsylvania. The dairy had a working platform in the center, a channel for water around the inside of the walls, and a drain for the water to exit in one corner (Plate 13). However, there was no spring on the site. The water to cool the dairy must have come from the adjacent well, Feature 27. The dairy therefore represents a traditional technology used in an unfamiliar and inappropriate environment, a springhouse on land without a spring.

The foundations of the dairy varied from 18 inches to 2 feet in thickness. They were constructed of uncut stones fitted together very roughly, so that the walls contained large chunks of sand mortar. Some of the stones used were more than 2 feet across and weighed over a hundred pounds. These

PLATE 12: Feature 15, the Dairy, and Feature 27, the Later Well, 1800-1840

stones were massive enough to resist destruction by the plow, and the foundations of the dairy projected up through the plowzone almost to the surface; over the years they must have given farmers many nasty jolts. The maximum surviving height of the walls was 2 feet 1 inch, about half in the plowzone and half below it. The walls were plastered on the inside. The stones did not rest on natural subsoil but on a platform of clay up to a foot deep, which extended across the entire structure. The builders must have dug out an 11-by-13-foot hole, 3 feet deep, and then filled in the bottom foot with clay before they started erecting the foundations. The clay was probably intended to make the floor hold water.

Running around the inside of the dairy walls was a ditch or channel 1 foot 2 inches across and 3 to 6 inches deep. The ditch was filled was dark yellowish brown sand. In the center of the dairy, surrounded by the ditch, was a level clay platform, formed of the same clay that underlay the foundations. Around the inner edge of the ditch, between the sand ditch fill and the clay of the platform, was a thin layer of dark loam containing nails spaced about a foot apart. This layer appears to have been the remains of a wooden lining on the inside of the ditch. The outside of the ditch was the inside of the foundation walls. Around the inside of these walls was an almost continuous sill, about 2 inches wide, at the same level as the top of the platform. The sill was constructed of three different materials. Along the west wall the sill was plaster; since the plaster bonded with the plaster covering on the walls, this appears to have been the original sill. Along the south and east walls the sill was a single row of bricks set on their narrow sides; only about half of this brick sill survived. In the northeast corner of the dairy, along the north wall, a section of the sill just over 4 feet long was

made of soft, sandy concrete. A builder's trench dug into the sand around this concrete sill showed that it was a later repair, made after the ditch had been allowed to fill up with sand. The whole arrangement of ditches sloped down toward the southeast corner, where a hole in the foundation wall allowed the water to flow out into a drainage ditch, Feature 8, that carried it off the site.

The small section of concrete sill in the dairy is interesting for two reasons. Building with poured concrete was rare in America before about 1830, so this repair may date to a period after the houses on the site had been abandoned, showing that the dairy, and possibly other farm buildings, continued in use after the Cochran family had moved elsewhere. Because the sand in the ditch had to be dug away to construct the sill, it seems that the original scheme of the dairy, using water hauled up from the well and poured through the ditch, had been abandoned, and the ditch allowed to fill with sand (or possibly even deliberately filled) before the structure itself was abandoned.

Above the level of the ditch and platform, Feature 15 contained two layers of soil (Figure 14). The top layer, Stratum A, was a dark loam very similar to the plowzone, up to 1 foot 3 inches deep, containing numerous small artifacts. This deposit contained sherds of whiteware in styles not made until 1825 and yellowware dated to after 1827, and it appeared to be the most recent on the site. The artifacts, therefore, also suggest that the dairy continued in use after the houses on the site had been abandoned. These artifacts included many tablewares, such as fragments of plates and cups,

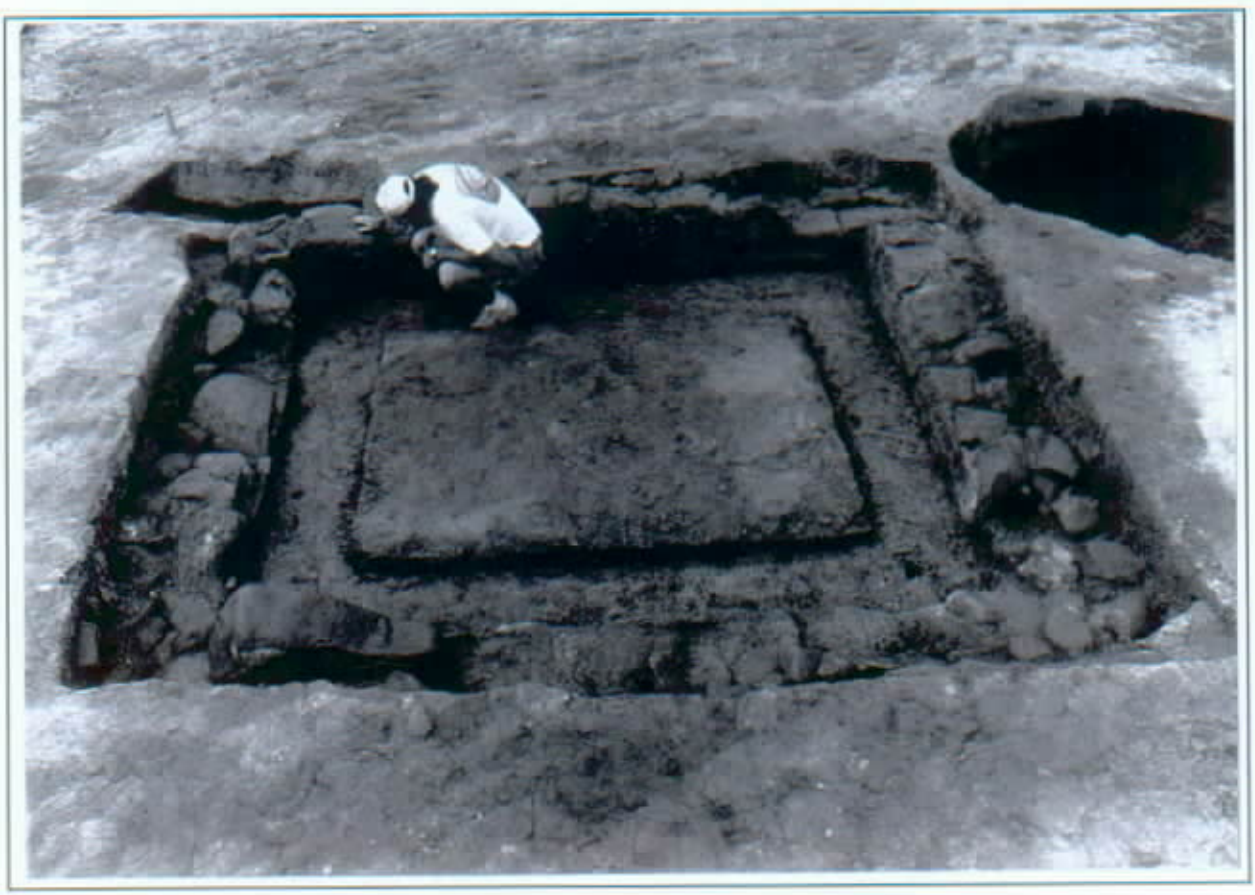

PLATE 13: Feature 15, the Dairy, and Feature 8, the Drain, 1800-1840

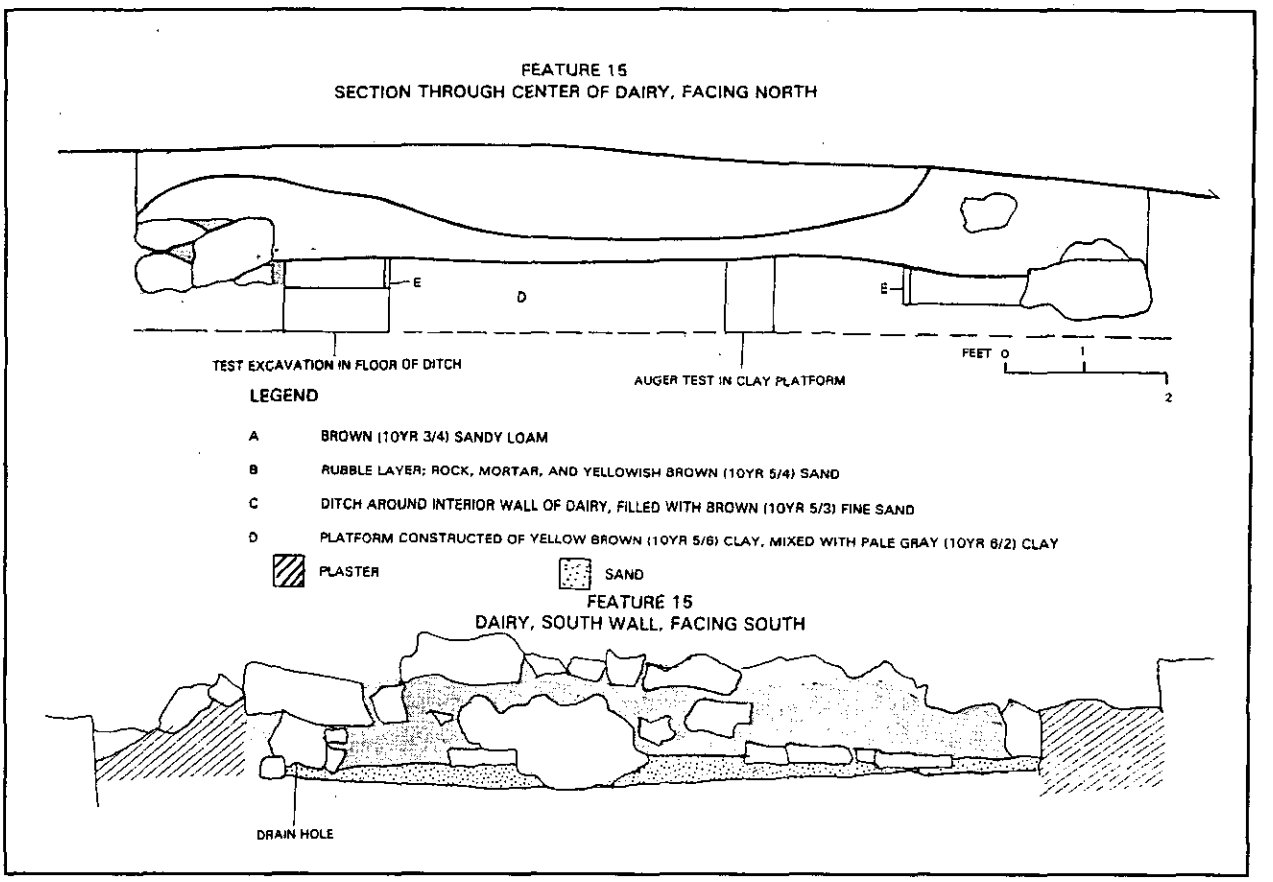

FIGURE 14: Profiles of the Dairy, Feature 15, Filled in Around 1840

indicating that someone probably lived on the farm, or even in the dairy, after the Cochrans had moved away; that is, the site was not just a work area or outlying farm for people living elsewhere. Beneath Stratum A was a deposit, called Stratum B, consisting of stone, brick, and mortar and containing very few artifacts. Stratum B seemed to derive from the destruction of the dairy itself. It lay directly on the floor of the dairy. It contained several pieces of window glass, so the dairy probably had at least one window. As very few other artifacts were found in or beneath the rubble, the dairy was probably empty when it was destroyed. The small size of most of the objects in Stratum A suggests that they had all been disturbed by the plow, or at least that they had lain on the ground to be stepped on, for some time before they were deposited in the feature. Therefore it seems that the feature filled in naturally, by erosion and plowing, after the structure had been torn down.

6. Feature 8, Drain

Feature 8 was a drainage ditch attached to the southeast corner of the dairy (Feature 15; see Figure 13). Water exiting the dairy through the hole in the south wall entered this ditch, which ran off to the southeast. The ditch could be traced for a length of 16 feet before it disappeared into a series of shallow pits. The ditch did not run directly down the slope, to the south, but angled eastward. Perhaps the shallow pits at the end of the ditch represent a wallow in the hog pen, toward which the ditch directed the water, or perhaps there was some structure, of which no evidence now survives, immediately south of the dairy. A small portion of Feature 8 adjacent to the dairy was excavated.

This excavation showed that the surviving ditch was 10 inches deep at its upper end. The ditch had been lined with wood, and part of the lining still survived in the floor. The fill in the ditch all consisted of washed-in soil, with few artifacts.

7. Feature 27, Well, Filled After 1825

Feature 27 was a well that appeared to date to the later period of the site's occupation. It was located adjacent to the dairy, Feature 15, and was probably the source of water for the dairy (see Figure 13; see Plate 12). Postholes along the south side showed that the well had been covered by a wooden structure. The feature was completely excavated to a depth of 5 feet below the base of the plowzone, and an auger was used to test it to a depth of 10 feet. The fill in the excavated portions consisted entirely of washed-in silt and sand. This soil did contain some artifacts, especially near the top, but it appears that they simply washed into the well after the site had been abandoned. The artifacts included ceramics which were not made until after 1825, dating the well to the last phase of the site's history. Since the artifacts did not constitute an intact deposit, and the artifact frequency was declining, no attempt was made to excavate deeper into the well.

8. Feature 1, Cellar, 1800 to 1830

Feature 1 was the cellar hole of the second house on the site (Figure 15; Plate 14). This feature had been discovered in one of the shovel test pits dug during the Phase II evaluation, which had been excavated as deep as we could reach without ever encountering the bottom of the feature. After the stripping of the plowzone, the cellar was revealed as a large but nearly amorphous brown stain, without distinct edges or corners. Only after the excavation of a unit near the edge of the feature, which came down on stone foundation walls, was it clear that this brown stain was really a cellar. The uneven shape probably represented erosion that took place while the cellar was filling in.

Excavation revealed that enough of the stone foundations of the house survived to determine a good deal about the house. The main foundation measured 26 by 18 feet. For excavation the cellar was divided into 18 units, measuring up to 2x2 meters. When it had been determined that the top fill in the cellar was a deep layer of largely sterile soil that had simply washed in, a backhoe was used to remove as much of that soil as possible. The remainder of the cellar fill was completely excavated and screened. Several 2-liter soil samples were taken for flotation from the artifact-bearing layers.

The foundation walls were constructed of large stones, a few of which had been roughly worked but most of which were in their natural, river-worn state. The stones had been fitted together carefully, so the walls contained less mortar than those of the dairy. The largest stones were in the lowest course; some of these were 4 feet long and 2 feet tall. The inside of the wall had been plastered smooth. Although the foundation was a solid construction, it was not geometrically perfect. None of the corners was exactly square, and the walls varied in thickness and were not exactly straight. As a result, the east-west distance between the interior sides of the walls varied from 13 feet 7 inches to 14 feet 5 inches.

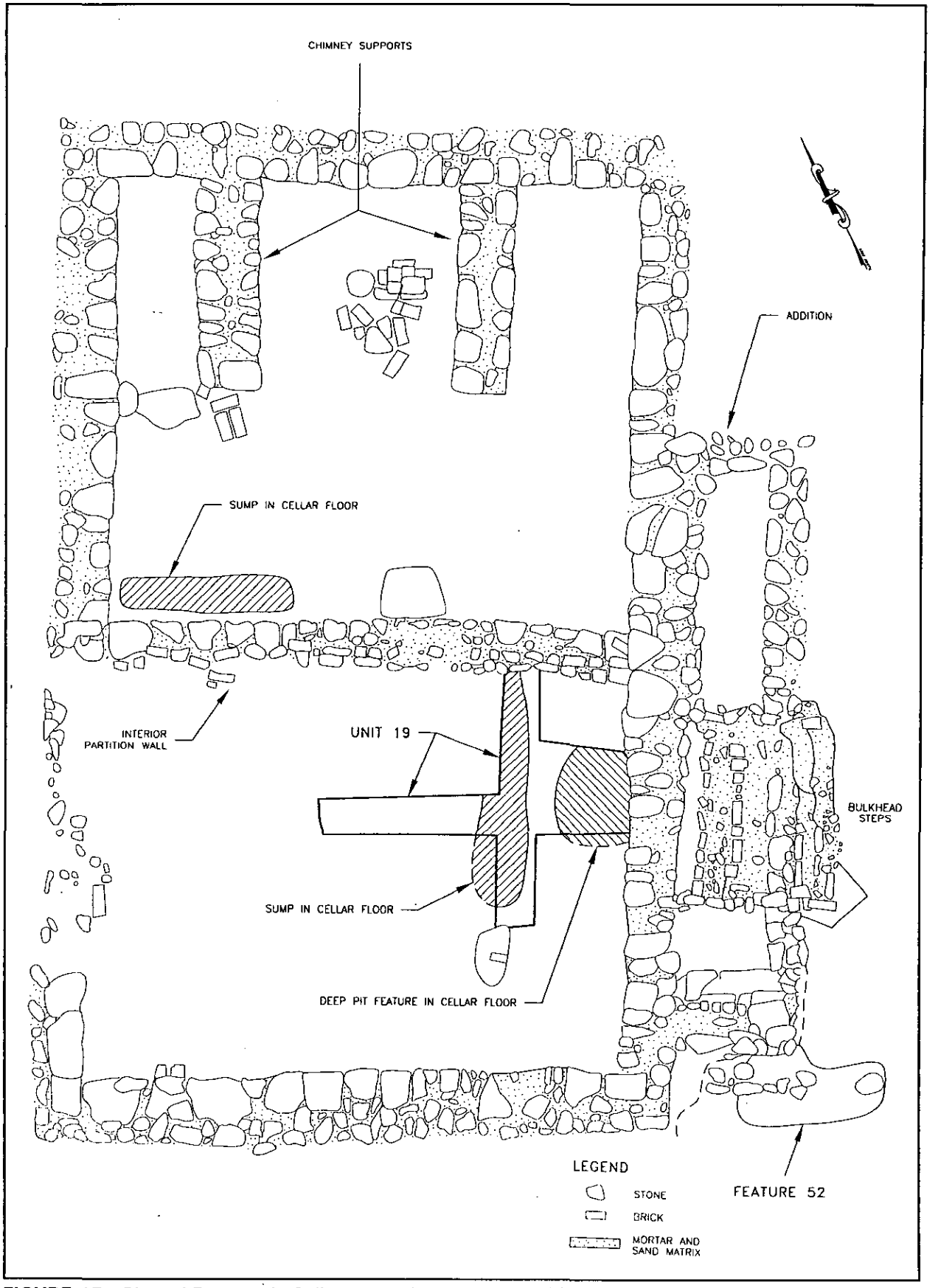

FIGURE 15: Plan of Feature 1, Cellar of the Later House, 1800-1830

PLATE 14: Feature 1, the Later Cellar, 1800-1830, from Overhead

PLATE 15: Feature 1, the Later Cellar, 1800-1830, Overhead View of Steps and Addition

Outside this main cellar on the east side were a bulkhead entrance and what appeared to be an addition (Plate 15). Two massive stone piers in the north end of the structure were probably the base of a vaulted chimney support. Near the cellar were two groups of unmortared bricks that appeared to be approximately in place. Three bricks at the end of the western chimney pier, in particular, must have been some sort of structural element, perhaps the support for a wooden post. The southern half of the cellar was 3 feet 8 inches deep. A stone and brick wall divided the cellar from east to west, and the north room had been excavated approximately 1 foot 8 inches deeper than the south room. The walls had been partially robbed, and one stretch along the west wall had been entirely removed. A clear robber's trench (a trench dug to remove usable stone from a backfilled cellar hole) was visible in profiles along the south wall.

The bulkhead entrance, which was on the east wall of the house, in the south room, appeared to be a later addition to the house. The steps were brick, about 4 feet 9 inches across. Parts of six steps were preserved, but they had not been very well constructed and were not in good shape. The steps ran across the foundation wall of the east addition, and one step rested on the addition's foundation wall. Most of the remaining bricks rested on dark, loamy soil, full of artifacts, that had been shoveled into the addition to form a ramp and then shaped into steps. Steps built in this way would not have been particularly strong or long-lasting, but the technique was used in at least one other eighteenth-century house in Delaware (Thomas et al. 1994:II-78) and may have been common. No

trace of an earlier bulkhead entrance was noted. However, a stone set in the cellar floor, near the southeast corner of the house, had a notch cut into the top that appeared to have been designed to receive a wooden post. This post may have been part of an interior stairway. There was also no evidence that a door was cut through the foundations when the steps were constructed, so there must already have been a door in this location, probably connecting the cellar to the addition.

The east addition measured 16 feet 5 inches north to south, along the wall of the house, and 3 feet 3 inches east to west. The foundation wall of the east addition was stone, 1 foot wide (narrower than the walls of the main house), and it survived to a height of 1 foot 4 inches above the cellar floor. The wall was probably never any taller. The top of the wall was level and flat, and a retaining wall built when the stairs were added rested on top of the wall at this height. The floor of the addition, a small, narrow space, was covered with 11 inches of sand. This sand was largely sterile, but near the bottom of the sand layer were lenses of black loam with oyster shell. This sand and shell floor, apparently designed to provide a dry, well-drained surface, suggests that the addition was a storage cellar primarily intended for keeping root vegetables such as potatoes, carrots, and turnips. Since the bulkhead steps were later constructed across the addition, it seems likely that it was connected to the main cellar by a door. Although the steps were constructed across the addition, splitting it in half and taking up about 40 percent of its already limited space, it seems that the addition was not wholly abandoned. The fill in the addition on either side of the steps was the same as the fill in the main cellar, so the cellar was filled in at the same time as the addition. Probably the space left on either side of the bulkhead steps continued to be used for storage even after the steps had been built.

The possibility was considered that this addition was the original entrance to the cellar, with the steps coming down from the south, parallel to the cellar wall. Several small stones on top of the addition's south wall looked very much like a step, complete with a space for a wooden sleeper along the edge. Closer examination showed that the addition had not been an entrance. The stones on top of the south end of the foundation wall, which resembled a step, rested on fill similar to that under the steps, so they also appear to have been a later addition. They were probably intended to support some part of a new wooden structure erected over the bulkhead. Also, testing south of the addition showed that the subsoil exterior of the feature rose up steeply beyond the wall, too steeply to have supported steps.

The wall that divided the north and south rooms was built mainly of stone. The wall was about 1 foot thick and 1 foot 8 inches high, the same as the difference in depth between the north and south rooms. A single line of bricks ran along the top of the wall, and probably supported a wooden partition wall. A single large stone rested against the north side of the wall near the center of the cellar. The stone was used by the excavators as a step when passing between the two rooms, and this may have been its original function. It is also possible that it was part of the substructure of a set of wooden steps, like the stones under the bottom of the wooden bulkhead stair in the early cellar (Feature 4). Just north of the wall, in the southwest corner of the north room, a sump had been dug into the cellar floor. (A sump is a hole dug in the floor in the deepest part of a cellar to collect water, making it easier to bail out any water that accumulates.) The sump was 4 feet 7 inches long, 1 foot wide, and 10 inches deep. The fill in the sump was silty sand that appeared to have washed in.

The cellar hole contained two main layers of fill (Figure 16). The top layer, designated Stratum A, was shallow along the edges of the feature but up to 3 feet deep in the center. This stratum consisted of dark grayish brown silt, obviously washed into the cellar after it had been abandoned, and it contained relatively few artifacts. Once it had been determined that this stratum was primarily washed-in silt, much of it was removed using the backhoe. Beneath this stratum in most of the cellar was a layer of rubble, which was designated Stratum B. The rubble layer contained large stones like those in the foundation, bricks, mortar, plaster, and more than 17,000 artifacts. Stratum B was shallow in the center of the southern room, about 6 inches thick. Around the walls in the southeast corner it was up to a foot thick. In the southwest corner, where the wall had been completely robbed, Stratum B was not present at all. The bulk of the rubble, however, was in the north room. In the center of the room, around the chimney supports, was a massive pile of stones, rising 5 feet from the cellar floor to the bottom of the plowzone. This pile presumably represented the chimney, which collapsed into the cellar after the house had been abandoned. Since stone and brick were present in this pile, the chimney had probably been constructed of stone to a point even with the ceiling of the second floor, and of brick above that level.

The artifacts in the rubble fill included more than 3,700 fragments of window glass, large quantities of ceramics, predominantly redware, pearlware, whiteware, and porcelain, hundreds of animal bones, including fish scales and small bird and fish bones, several bone-handled knives, a pewter spoon, a stirrup, a spur, and the metal remains of a barrel. The unusual objects recovered included an intact stoneware ink bottle, a surgeon's lancet, and a single small cannon ball. Almost 3,000 nails were found, and nearly all of the identifiable nails were handwrought. Machine-cut nails became increasingly common after 1800, so the house cannot have been built long after that date. Since the cellar of the previous house (Feature 4) contained a sherd of pearlware datable to after 1795, the construction of the house at Feature 1 can be dated to the years from 1790 to 1805. The destruction of the house can be dated by the objects found in the fill. Sherds of pearlware were found decorated in a style that was not used until after 1815, so the house cannot have been demolished, and the cellar filled, until after that date. A single "modern" cut nail was found, datable to after 1830, but it is dangerous to date a large deposit on the basis of a single, small artifact, which might have fallen down through a gopher hole. No whiteware, a type of ceramic common after 1820, was found in the cellar. A date of 1820 to 1830 seems reasonable for the destruction of the house. Beneath Stratum B in the north room were several lenses of washed-in sand and silt, suggesting that the structure may have been left open to the elements for some time before it was demolished. Few artifacts were found in or under these wash layers. The cellar, like that of the earlier house, was probably empty when the house was demolished, indicating that the house had been abandoned before it was torn down.

The floor in the north room of the cellar was natural subsoil, as was the floor in the southwest corner of the south room. The south wall of the house rested on natural subsoil. However, most of the floor in the south room was redeposited clay. Trenches, collectively designated Unit 19, were dug through this clay floor to determine its depth and see what lay beneath. This fill, which contained very few artifacts, was shallow in the southern part of the room but deepened toward the center wall of the house, sloping down to the bottom of the wall. When the center wall was constructed, the floor on

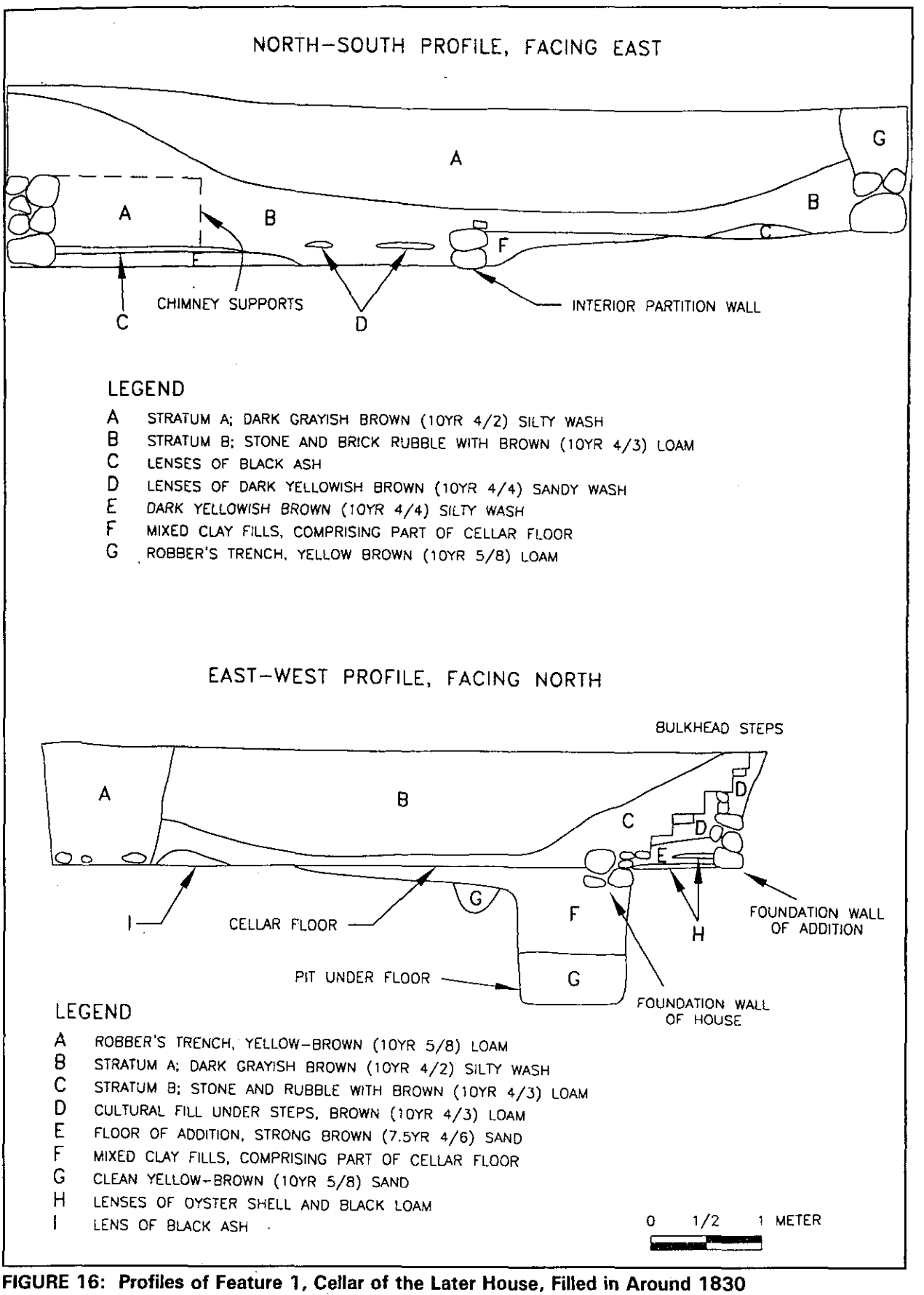

FIGURE 16: Profiles of Feature 1, Cellar of the Later House, Filled in Around 1830

both sides was nearly even, and the south side was then built up with clay to the level of the top of the wall. The large stone on the floor in the southeast corner of the house, which might have been the base of a stair post, was set 2 inches deep into the clay floor. The use of such clay flooring to level a basement floor was not unusual, and it has been found in other eighteenth-century houses. More puzzling were two pits found underneath the clay floor. The first one discovered was a narrow trench, about a foot wide, that extended south from the central wall about 6 feet into the south room. This trench was about 18 inches deep, with steep sides and a flat bottom. It was filled with clean, yellowish brown sand. Toward the interior wall, the trench was cut through by the clay fill of the floor, showing that the trench had been excavated and filled in with sand before the north room of the cellar was dug to its final depth and the center wall installed.

Just a few inches east of the trench a second and even more unusual subfloor feature was found. This was a roughly round pit, 3 feet in diameter, that extended to a depth of 4 feet below the eventual cellar floor. The bottom of the pit was thus nearly 8 feet below the bottom of the plowzone and at least 9 feet below the historic ground surface. The upper 2 feet 9 inches of the pit was filled with clay identical to the cellar flooring; below that was yellowish brown sand identical to the sand in the shallow trench. The pit extended below the east foundation wall of the house to about the center of the wall. The pit had, therefore, been completely filled before the foundations of the house were laid. A few artifacts were recovered from the clay fill in this feature.

The presence of the subfloor features shows that the hole that later became the cellar (Feature 1) had a complex history, but the sequence of events is far from clear. Taken by itself, the deep, round pit might have been interpreted simply as a shaft feature that had been dug down from the surface. When the builders decided to put the house in this location, they would have filled in that part of the shaft that went deeper than the cellar floor. However, this interpretation cannot hold for the shallow trench, which was too narrow to have been dug down from the surface. Since the two features contained identical fills, they were probably dug and filled at the same time. Therefore, the first action on the spot was almost certainly the digging of a large hole, at least 10 feet across, with the shallow trench and the pit as parts. It is possible that Feature 1 was in fact the cellar of the second house on this spot. However, a careful search for other evidence of such a house failed to locate any. If a completed cellar was constructed here before Feature 1, it was probably a rather small one, perhaps an ice house. More likely, these subfloor features represented the first stage of the digging of the eventual cellar. The design must have been changed during construction, leading to the placement of the east wall over the pit. Also, for some reason the construction was delayed long enough for sand to wash into the uncompleted cellar, leaving the deposits in both the trench and the pit. This scenario, while not altogether likely, seems to best fit the peculiar characteristics of the south room floor.

9. Structures A and B, Post Barns, 1750 to 1800

Just south of Feature 1 were two large post buildings, designated Structures A and B (Figure 17). The posts that formed the foundations of these structures were round and quite large, up to 1

foot 8 inches in diameter. The postholes in which the posts had been set were also large, ranging in size from 3 by 3 feet to nearly 3.5 by 5 feet. Most were about 1 foot 10 inches deep (Figure 18). Fifteen postholes made up the two buildings, both of which were almost certainly barns.

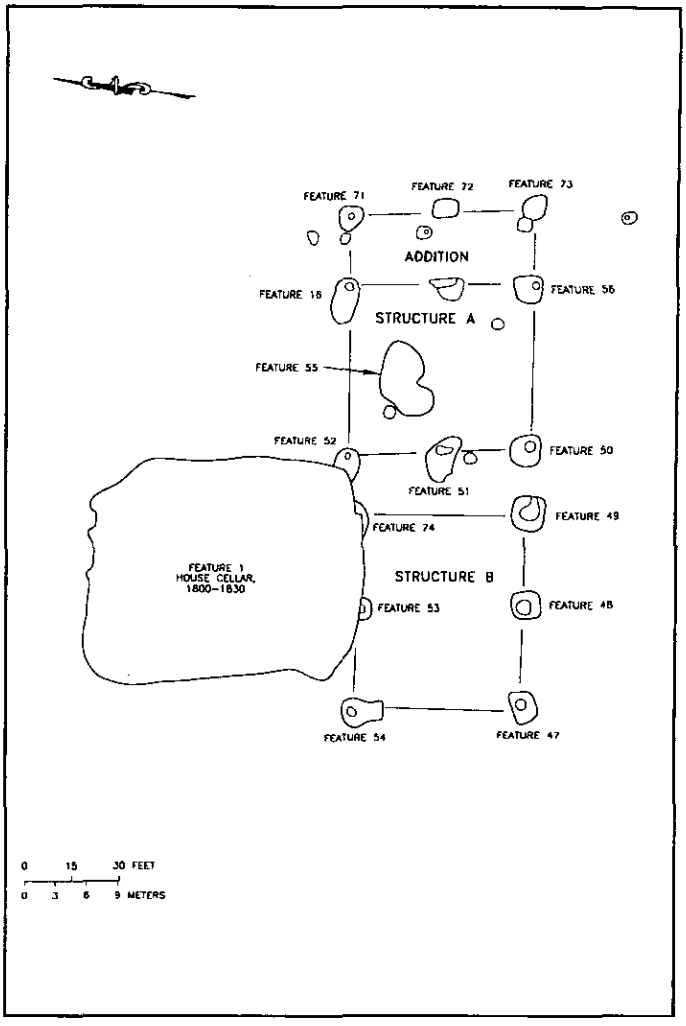

FIGURE 17: Plan of Structures A and B, Barns, 1750-1800

Structure A, the western building of the pair, measured 18 feet by 20 feet 6 inches and consisted of six posts, three on each of the long sides. These posts were designated Features 47, 48, 49, 52, 53, and 54. Each pair of posts was separated by about 10 feet. Ten feet was one of the most common lengths for a structural bay in the English tradition, and 18 feet was a common width for a building. Two of the posts on the northern side of the building had been truncated by the later cellar (Feature 1), showing that Structure A belonged to the earlier phase of the site's occupation, in the eighteenth century. The relationship of Structure A to the later cellar was not clear at first. A groundhog had dug a tunnel about where the post mold of the north-central post should have been, making it appear that the posthole had been dug into the fill of the cellar. However, careful excavation of the northeast post (Feature 52) later showed that it was clearly beneath part of Feature 1, Stratum A.

Structure B, located only 3 feet east of Structure A, was more complicated. It was made up of nine posts, in three rows of three, running north to south. Each row was 19 feet long, and the distances between the posts were equal, about 9 feet 6 inches. The distance between the western and central rows was 17 feet. The distance between the central and eastern rows, however, was only 7 feet 6 inches. The building thus measured about 25 by 19 feet. These measurements are all somewhat unusual, since British builders always had a strong preference for numbers divisible by two or three. The asymmetry of the structure was also unusual, since in most post buildings all the bays were the same size, as in Structure A. Most likely the structure originally measured 17 by 19 feet, and the eastern bay was an addition. These relationships can sometimes be determined by measuring the elevations of the postmold bottoms. The most common colonial technique for constructing post buildings seems to have been to put together two or more posts and their cross beams into a unit

before erecting them. Because the posts would be of equal length, the holes would have to be dug to the same absolute depth, or the roof line would be uneven. However, no two postmold bottoms in Structure A or Structure B had exactly the same elevation. Either the builders did not care greatly whether their barn roof was straight, or they raised the posts individually and then framed up the barn around them.

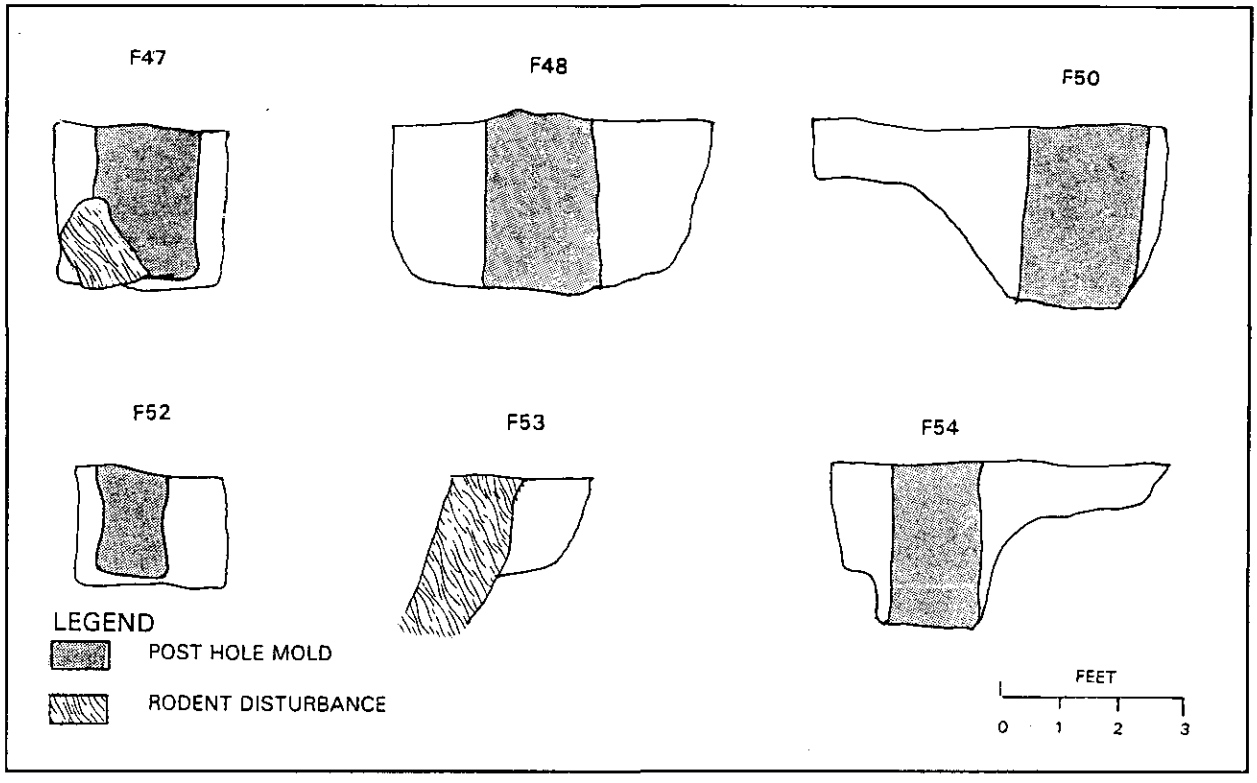

FIGURE 18: Profiles of Selected Postholes in Structures A and B, the Earlier Barns

The south sides of Structures A and B, the sides that would have faced the house (Feature 4), aligned almost exactly. Probably, therefore, they were standing at the same time. (Since the two structures were of different widths, their back walls did not align.) It was fairly common in colonial America for barns to be expanded over time as farms became established, and Structures A and B seem to represent such a development (Carson 1994:561). It is not possible at this time to tell which of the barns was built first. One way to determine such relationships among post structures is to consider the number of artifacts in the posthole fill. When a posthole is dug and refilled, any artifacts that were on the ground or in the topsoil will be incorporated into the posthole fill. The first postholes dug on a site should be nearly sterile, because there would have been few artifacts lying around. Holes dug many years later, after numerous small objects have been dropped on the ground around earlier structures, should incorporate more potsherds and nails. However, all the holes in Structures A and B were completely sterile. Either the construction of the barns took place within a fairly short period of time, or the site of the later barn was carefully cleared before excavation of the postholes was begun.

10. Smaller Features

a. Feature 55, Pit

Feature 55 was a shapeless pit located within the post barn known as Structure B. It measured about 7 feet 10 inches long by 4 feet 7 inches wide, and it was up to 10 inches deep (Figure 19). The fill consisted of mottled dark brown loam and dark yellowish brown loamy sand, and the edges were not entirely distinct. The feature yielded over 200 artifacts, including more than 100 bones, 78 nails,

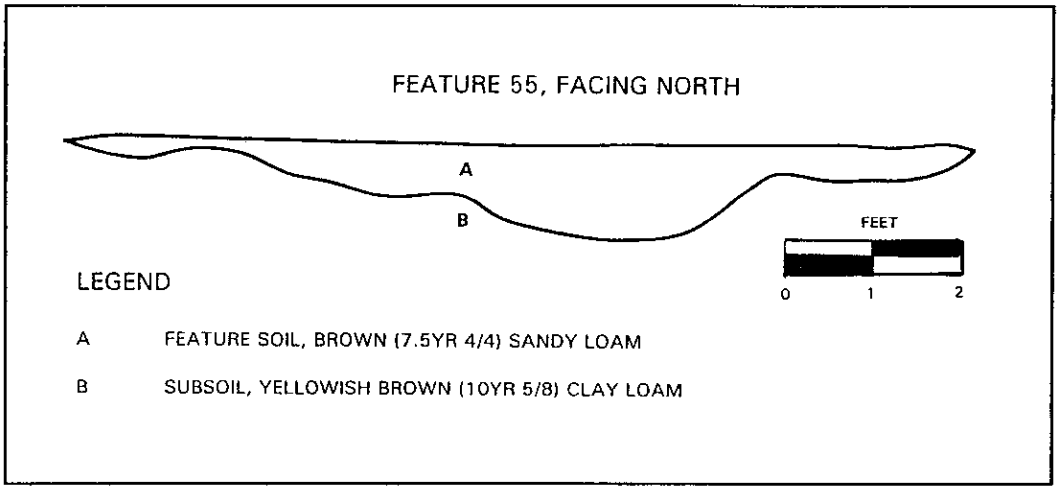

FIGURE 19: Profile of Feature 55, a Shallow Pit Within Structure B

a chisel, and 18 fragments of tobacco pipes. The only ceramics found in the feature were four small sherds of red earthenware. In general, there were many times more ceramic sherds than pipe fragments on the site, so the ratio of these items from Feature 55 is strikingly different from the overall pattern. Five miles away, at the Augustine Creek South Site, where a farm dating to about 1730 to 1760 was recently excavated, one part of the site was identified as a separate workshop area, where the excavators found many pipe fragments and few pieces of ceramics (Bedell 1997). An image comes to mind of men smoking while they worked, although we should remember that in the eighteenth century many women also smoked pipes. In any case, the artifacts from Feature 55 seem to be objects dropped in a work area, not trash from the house or the kitchen. A clue to what work was carried out in this area is provided by the bones, which were primarily the waste from butchering cows, pigs, and sheep. The nails probably came from the destruction of Structure B, so Feature 55 was probably filled in at the time the building was torn down.

b. Feature 58, Pit

Feature 58 was a roughly circular pit located about 18 feet northeast of Feature 1. It measured just over 4 feet in diameter and was up to 8 inches deep. The fill was dark yellowish brown silty loam flecked with light yellowish brown sandy loam. The feature yielded more than 100 artifacts, mostly small sherds of ceramics, but including an iron wedge. The most likely interpretation of the feature

is that it was a tree hole later used as a trash pit. None of the artifacts were datable to after 1775, so the feature was probably filled in before 1800.

c. Feature 59, Pit

Feature 59 was a shallow, circular pit located about 4 feet west of the later house The fill in the pit was a brown sandy loam essentially identical to the plowzone. The feature contained 180 artifacts dating to the eighteenth century, including Westerwald stoneware and white clay pipestems. The most common artifact was nails. No pearlware or whiteware was recovered. The feature was probably in the front yard of the new house after it was constructed, but it appears that by that time the pit had been filled in. From the large number of nails present, it seems possible that the feature was actually filled in during construction of the house. One fork was found in this pit, and one screwdriver. The discovery of a screwdriver on an eighteenth-century site surprised many of the crew, but screws had been made in Europe since Roman times and were far from rare in colonial times. Because screws had to be forged individually, and the grooves cut by hand, they were quite expensive. For this reason, they were used only for such purposes as assembling wagon axles, where holding strength was essential.

d. Feature 38, Tree Hole

Feature 38 was a large, irregular feature located near the southeast corner of the site that appeared to be a burned tree stump, or perhaps two adjacent burned stumps. The feature measured 19 feet north to south and up to 10 feet east to west. The northern third of the feature was excavated as Unit 1, the southern third as Unit 2. The fill was mixed brown loam, black ash, and clay burned to a brick-orange color. The feature was about 8 inches deep in the center and the floor was very uneven, pockmarked by what appeared to be root holes. The brown loam in the feature did contain a number of artifacts, all datable to the eighteenth century, and more than 50 fragments of bone.

e. Feature 68, Pit

Feature 68 was a large, shallow, roughly oval pit just north of the northwest corner of the later house. The feature measured about 16 feet east to west and 7 feet north to south and was about 6 inches deep. The fill, like that in Feature 59 nearby, was nearly identical to the plowzone. Unlike Feature 59, however, Feature 68 contained very few artifacts, a total of seven items.

f. Features 31 and 32, Possible Postholes

Features 31 and 32 were oblong pits located about 2 feet north of Feature 29, the early well. Both measured about 2 feet long and 1 foot 8 inches wide, and they were 8 feet 10 inches apart. No clear post molds were visible in the holes. Feature 31 was completely excavated, and it proved to be 6 inches deep, with steeply sloping sides. The fill consisted of mixed brown loam and yellowish brown sand. Several artifacts were recovered, including a sherd of pearlware. Although these

features may have been postholes, it is not clear what they might have been part of, and an interpretation of the features as pits seems more likely to be correct.

g. Feature 34, Brick-Filled Pit

Feature 34 was a pit located east of the early cellar, in the sloping, badly eroded part of the site. The Feature was 6 feet 6 inches long and 2 feet 7 inches wide. Feature 34 was parallel to Feature 8, the drain attached to the dairy. A test excavation showed that the feature was about 3 inches deep. The fill in the feature was brown loam identical to the plowzone, except that it was full of brick pieces, some as large as half a brick. No other artifacts were noted in the feature. Because of the large quantity of brick, it seems likely that Feature 34 was somehow associated with a building that stood in this area.

11. Fences

The northern half of the McKean/Cochran Farm Site was covered with small postholes, a total of more than 80 (Figure 20). Fewer were found in the southern half and none along the southern edge, probably because severe erosion on the slope had washed them away. Although many holes were found, it was difficult in most cases to determine whether they were for fence lines or for buildings, and only about half of those found can now be explained. Only a few fence postholes were excavated.

a. Fence A

The most obvious fence line on the house ran almost completely across the site from north to south. The small posts were set at consistent intervals of 10 feet 6 inches, which was probably measured as 10 feet between posts by the builders. This fence cut the farmyard in half, and it exactly paralleled the plow scars on the site and the field ditch, Feature 47. It did not align with any of the buildings on the site. One posthole clearly cut through one of the holes of Structure B. Fence A was probably not built until after the McKean/Cochran Farm had been abandoned.

The only posthole in this line to be tested was Feature 63, near the center of the site. This hole was roughly square, 14 inches on a side, and 9 inches deep below the bottom of the plowzone. The post mold was round, 5 inches in diameter.

b. Fence B

Fence B was located in the east-central part of the site, east of the unfinished cellar (Feature 2). The interval between posts was not consistent, and some of the holes shown in the plan must not have been part of the fence. However, a few posts with a regular 8-foot interval are present, and the line executes a clear 90-degree corner, so it does appear to represent a fence. The corner in the fence was probably the southeast corner of the farmyard during the site's later period.

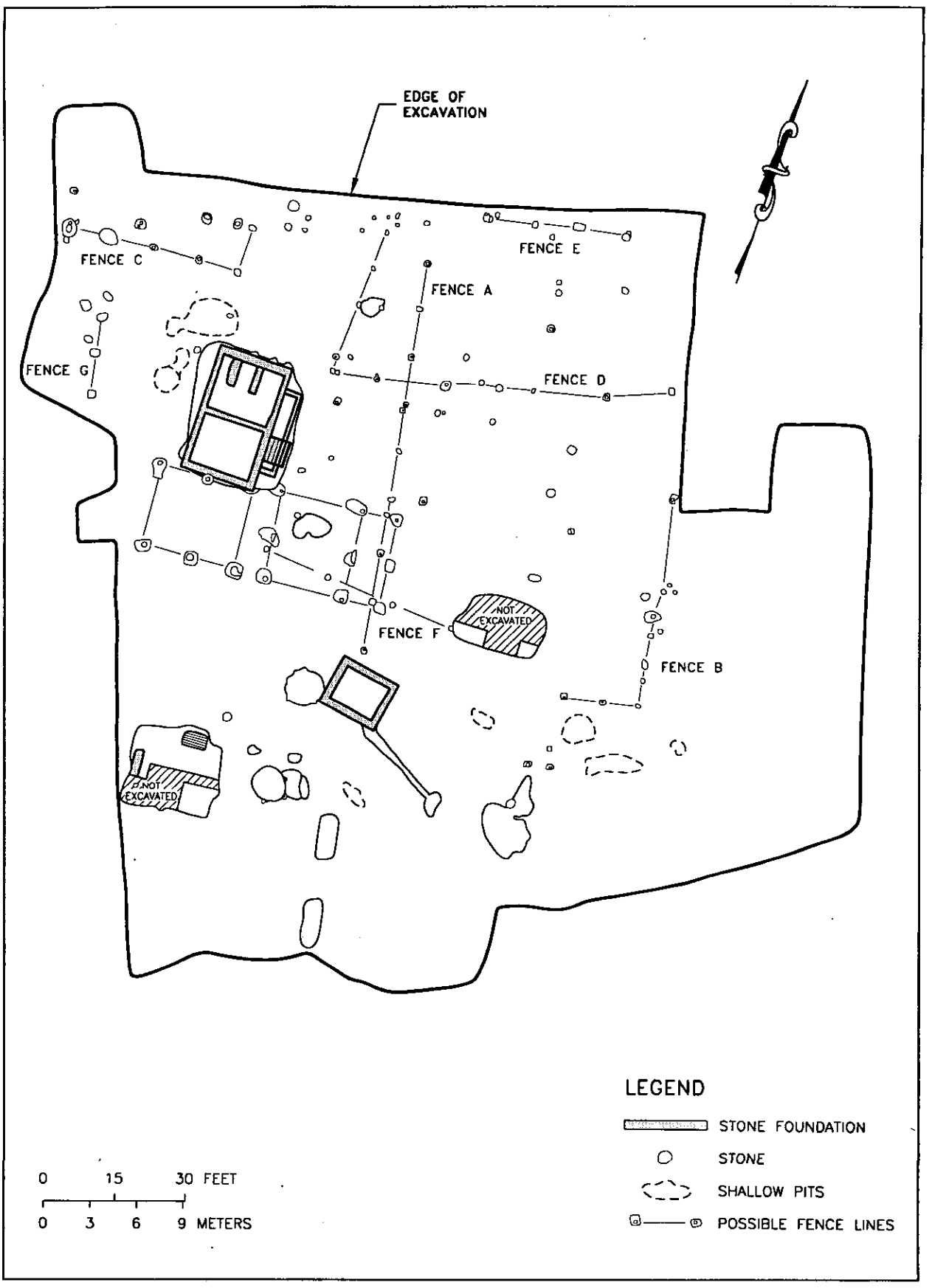

FIGURE 20: Plan of Fence Lines

c. Fence C

Fence C was a group of rather large postholes located northwest of the later cellar. The interval in the line varied from 10 to 12 feet. The two westernmost holes in the line, as far as the line was exposed, were both 3 feet 6 inches long, much larger than one usually finds in a fence and large enough to have been part of a substantial building. These holes had been in the northwest corner of the stripped area, and to search for the other side of this building the plowzone was removed from an additional area along the north edge of the excavation. This addition would have exposed any postholes up to 28 feet from the large holes in Fence C, but none were found. Therefore, these large holes do seem to have been part of a fence. The fence may have made a 90-degree corner, even with the front of the second house. If it did, it probably surrounded an area in the second-period front yard, possibly an orchard or garden. Several other postholes in this area could not be accounted for, so other fence lines or small buildings may have been present in this area.

d. Fence D

Fence D included two lines of postholes, neither with a consistent interval, located northeast of the later cellar The two lines appeared to meet at a corner roughly in line with the north wall of the house, 10 feet from the northeast corner. The angle between the fences was not 90 degrees, but closer to 80 degrees. The north-south part of the fence was roughly in line with the later house. The east-west line extended for about 60 feet across the farmyard. If these lines did represent a fence, it was probably part of the second-period farmyard.

e. Fence E

Fence E was a series of postholes, some at regular and some at wildly varying intervals, running east to west about 30 feet north of the later cellar. Four of the holes were grouped in a straight line at even 10-foot intervals, clearly a section of fence. The other holes, although not at regular intervals, seemed to indicate the general existence of a barrier in this location, probably the north edge of the second-period farmyard.

f. Fence F

Fence F was four small postholes set at intervals, located southeast of the later cellar. One end of the fence was at the southwest corner of the unfinished cellar (Feature 2), but the fence did not align with Feature 2. The date of this fence is not clear. The holes ran across Structure B, so they must have been dug either before Structure B was built or after it had been torn down, but it is impossible to say which.

g. Fence G

Fence G was an assortment of rather unusual holes, not even clearly postholes, located west of the later cellar. These holes were roughly rectangular, about 20 inches long, and the fill in them was

very clean redeposited subsoil, with none of the dark loam (topsoil) inclusions one usually finds in postholes. None showed any trace of a post mold. One of the holes, Feature 70, was excavated. It proved to be 7 inches deep, with straight sides and a flat bottom, obviously not a natural hole. Beyond that, no clear interpretation of these features could be made.

V. ARTIFACT ANALYSIS

A. OVERVIEW OF THE ARTIFACT COLLECTION

Artifacts are the things that people living in the past made and used, and the study of artifacts is the primary way archaeologists learn about the past. Approximately 38,000 artifacts and animal bones were recovered during the excavation of the McKean/Cochran Farm, 7,500 from the plowzone and 30,500 from the features. The collection was particularly rich in bones, which are described in Chapter VI, and ceramics (pottery) (Plate 16). Of the total of 38,000 artifacts, about 9,500 were bone, and over 13,000 were ceramics. The other large categories were 2,700 fragments of bottle or vessel glass, 5,600 nails, and 5,800 pieces of window glass. The remainder of the historic artifacts were a miscellaneous assemblage of objects, including tools, buttons, buckles, tobacco pipes, unidentifiable bits of iron, seven coins, and even a few fragments of jewelry. About 650 prehistoric artifacts were also found, most of them waste flakes from the manufacture of stone tools. The collection did not include much material from after the abandonment of the site, around 1830.

B. THE DEPOSITS

In analyzing artifacts from archaeological sites, it is important to know not only what they are but where they came from. Artifacts found in different places can imply different things about the past. A pot found in a grave, for example, would have a different meaning than a pot found in a trash pit. Archaeologists sometimes speak of a place where artifacts were found as a *deposit* or *context.* A deposit is usually either a single feature, such as a pit, or a soil layer that contained artifacts. For some purposes it is useful to consider all the artifacts from a site, or all the artifacts from one period on a site, but archaeologists usually want to analyze the artifacts from each deposit separately.

At the McKean/Cochran Farm, artifacts were found in the plowzone, which is here considered as a single deposit, in shallow pits, in abandoned wells, and in the cellars of houses that had been destroyed. The wells and cellars each contained more than one deposit. At least 20 separate deposits can therefore be identified on the site.

How did the artifacts come to be in the places where they were found? This question is one of the hardest in archaeology, and often cannot be answered at all. Some items were simply dropped or lost. The two coins found in the plowzone at the McKean/Cochran Farm were probably lost, since they were both silver and therefore worth too much to have been thrown away. Most artifacts were thrown away as trash. But "throwing away trash" can describe many different actions. Some objects were just tossed out the window or swept out the door, and left to lie on the ground; others were deposited in pits. Sometimes trash was carted substantial distances and disposed of out of sight, and at other times it was left next to the house. To make matters more confusing for archaeologists, sometimes trash is dumped in one place, left there for a time, and then moved somewhere else. We say that artifacts that were dumped, or deposited, and then moved to another place have been

Plate 16: A Selection of Artifacts from the McKean/Cochran Farm

redeposited. At Kingsmill on the James River, just east of Williamsburg, archaeologists excavated a colonial well that was eroding out of the riverbank (Kelso 1984:161). The well contained several distinct deposits, most of them dating to the eighteenth century. However, in the middle of the well, above deposits dating to the 1730s, was a layer of soil containing artifacts dating to the period 1650 to 1680. These artifacts had obviously been lying somewhere else for at least 50 years, and were then moved and redeposited. Where had they been? And why did someone feel the need to move them? One can imagine many scenarios. The trash could have been piled in a semi-abandoned outbuilding, which was then cleaned out for some reason or torn down to build another. Or the artifacts could have been dumped in an old drainage ditch, which 50 years later someone decided to redig and deepen. However it happened, such possibilities remind us that the journey of an artifact from the hands of its last user to the place where it is found may have been long and complicated, and that artifacts lying next to one another in the ground may have traveled to that spot along completely different routes.

1. Feature 4, the Early Cellar, 1750-1800

Feature 4, the cellar of the first house on the site, contained several distinct deposits, including a thick layer of nearly sterile clay and a layer of burned boards that seemed to be the remains of the house. The burned layer produced more than 50 nails, all of which were handwrought. (Nail-making machines were introduced around 1790.) Most of the artifacts, however, came from a single deposit, a thick layer of brown loamy soil at the north end of the cellar. Thin layers of washed-in

sand within this deposit show that it was not all dumped in at once but accumulated over some period of time. After the old house had been torn down and its stones and nails salvaged for other building projects, the residents, by then living in the new house a few yards away, probably carried some of their trash to the open cellar hole and dumped it in.

This deposit contained at least two vessels of creamware, a cream-colored refined earthenware used to make tablewares and teawares that was introduced by Josiah Wedgwood in 1762 (and made him rich and famous). Fragments of glass tumblers, etched with a wheel in patterns dating to after 1760, were also found. The most recent objects found in the cellar were three sherds of pearlware or early whiteware. Pearlware, a white ceramic tinged with blue, was introduced around 1775. One of these had a pattern introduced in about 1795, but it is dangerous to date a deposit on the basis of one small artifact. The cellar was therefore filled in sometime after 1775, and quite possibly after 1795. The small quantity of these later ceramics, however, suggests that the filling was done not long after 1795, and probably before 1800. The majority of the artifacts were significantly earlier. Several fragments of at least one North Devon sgraffito (scratched) slipware pan were found, and the standard references on eighteenth-century ceramics assert that these vessels were not made after 1710 (Noël Hume 1970; South 1977). We believe that this date is too early, and that these vessels may have been made as late as 1750 (Allan 1984), but these pans were certainly old by the time they were dumped into the cellar hole. Vessels of Westerwald blue and gray stoneware with sprigged and incised decoration were also identified, as well as fragments of "Midlands Mottled" ware, both of which were probably made before 1750. The identification of these vessels was puzzling, since we had been thinking that the site had not been occupied before about 1770. It would not be too surprising to find a few old ceramic vessels on any site, especially if the old specimens were porcelain or some other fine ware that might have been handed down in a family for generations. It seems less likely that coarse slipware pans, which see heavy use, would stay around so long, but it is still possible. These few old ceramic vessels could not, therefore, tell us by themselves that the site was older than we thought; we needed some more general way of dating the deposit.

One method historical archaeologists use for estimating the date of a deposit is the mean ceramic dating technique (South 1977). Many types of ceramics have known dates of manufacture. White salt-glazed stoneware, for example, was made only between 1720 and 1805. The mid-point of this range is 1762.5. Slipware with comb and dot decoration was made primarily between 1670 and 1795, which yields a mid-point of 1732.5. To compute a Mean Ceramic Date, one simply multiplies the number of sherds of each kind of ceramic by the mid-point of its date range, and then divides by the total number of datable sherds. The technique works well only for the period between about 1670 and 1850, when there was rapid evolution in ceramic manufacturing techniques, and even in that period it is not a precise tool. Still, the number can give us some idea of the time we are dealing with. The Mean Ceramic Date for Feature 4, based on 414 datable sherds, is 1744. This number indicates that the cellar contained not just a few old pots but a predominance of material from before 1770. The ceramics from Feature 4 therefore convinced us that the McKean/Cochran Farm Site was occupied before 1770, probably from about 1750, and possibly even earlier.

The ceramic vessels from Feature 4 were highly fragmentary. Ninety-seven of the 108 vessels identified were less than 10 percent complete, and none were more than 50 percent complete. The deposits in the cellar therefore do not, in general, represent trash that was carried directly from the place where it was produced to the cellar; no one dropped a pot, scooped up the pieces, and tossed them into the old cellar hole. The objects dumped in the cellar had probably been lying in piles somewhere else for a considerable time and had been moved, or redeposited, at some point. Quite possibly the artifacts in this case had been in old buildings (such as Structures A and B) that were being torn down at the time, or in soil that was in the way of new construction. Therefore, despite the large number of artifacts in the cellar fill that had been used and discarded long before 1800—and possibly before 1750—the cellar may have been filled around 1800, since this was not the first resting place for these artifacts.

2. *Feature 29, the Early Well, 1750-1800*

Feature 29 was a well that was abandoned before 1800. After the lower part of the shaft had filled with washed-in sand, the upper part was used as a trash pit. Among the objects recovered from this feature were a brass candlestick (Plate 17), a sickle blade, and quantities of ceramics. Strata A, B, and C, the top three layers in the well, were all very similar and contained similar artifacts. Because fragments of what appeared to be the same teapot were recovered from Strata A and C, the entire upper portion of the well is here treated as a single deposit. No lenses of washed-in sand, such as one would surely find if the well had been open for any length of time, were found in the top three strata. The artifacts may therefore have been thrown into the well within a period of a few

PLATE 17: Brass Candlestick from the Early Well, Filled Around 1800

months or even less. The deposit contained several creamware vessels and two sherds of pearlware, but, as in the early cellar (Feature 4), the majority of the datable artifacts from the feature were older. The Mean Ceramic Date for this deposit was 1763.

One of the peculiarities of this deposit was that it contained several very large sherds of coarse red earthenware that appeared to be the only fragments of the vessels they came from. One usually finds that very incomplete vessels are represented by small pieces and that large sherds come from vessels that are more or less complete. When a pot has been broken into a few large pieces, those pieces are usually carried out and dumped together. In Feature 29, however, a piece of a pipkin (clay cooking pot) was found that included the handle and about a quarter of the body, but there were no other pieces of the pipkin. Other isolated large sherds were also found. Some of the fill in the well had probably been redeposited from trash heaps located elsewhere. However, it must be remembered that the top foot or so of the well fill had been destroyed by plowing, so the rest of the partial pots may have been plowed away. As the feature did contain some nearly complete vessels, it is likely that some trash was dumped directly into the well.

What type of trash was thrown directly into the well? Certainly it was not mostly ceramics and glass, even though these were the objects that appeared most prominent to the archaeologists digging in the well. Eighteenth-century farms generated large amounts of wood ash, and archaeologists can usually identify trash deposits from the large amount of charcoal they contain. The soil of the trash deposits in the well was flecked with charcoal. The well also produced large numbers of bones, including waste from the butchering of chickens and the processing of cow and sheep carcasses, as well as fish scales and vertebrae. When the trash was dumped into the well, it probably consisted largely of hearth sweepings, kitchen scraps, and butchery waste.

3. Feature 15, the Dairy, 1800-1840

Feature 15, the dairy, contained one artifact-rich deposit, designated Stratum A. Stratum A was a layer of brown loamy soil, very similar to the plowzone, that accumulated on top of the rubble of the demolished building. This deposit was therefore not directly related to the dairy, and most of the artifacts may have washed into the hole left by the dairy years after it was abandoned. Most of the ceramic and glass fragments were small, like those in the plowzone. For this reason, Minimum Number of Vessel (MNV) determinations (defined below) were not made for the dairy.

However, the artifact deposit in the dairy was not like the deposit in the plowzone in every other respect. For one thing, the artifacts found in the dairy were significantly more recent than those recovered from the plowzone. The Mean Ceramic Date for the dairy was 1815, and the Mean Ceramic Date for the plowzone was 1790. The dairy yielded the most recent artifacts from the site, including sherds of yellowware from after 1827 and whiteware from after 1825. Also, examination of the dairy structure showed that it had been repaired with concrete, suggesting that this building might have remained in use after the house was abandoned. The artifacts in the dairy fill are therefore probably associated with the structure in the sense that many of them date to the last phase in the site's history, when activity seems to have centered around the dairy. Since the late artifacts

are sherds of yellowware bowls and whiteware plates, they suggest that someone was living on the site, not just working in the dairy; the dairy building itself may even have been used as a residence. The dairy fill did not yield a particularly large number of milk-pan fragments. However, large numbers of coarse redware sherds, many of them probably from milk pans, were found in the plowzone south and southeast of the dairy. Broken pans were probably swept or thrown down the slope in that direction. In this case, the dairying artifacts were found in the plowzone around the feature, not inside it.

4. Feature 1, the Later Cellar, 1800-1830

Feature 1, the later cellar, contained nearly half of the artifacts recovered from the McKean/Cochran Farm. Most of these artifacts were mixed in with the rubble fill in the cellar. Because the house at Feature 1 was the last house, so far as we know, to stand on the site, a deposit like the rubble fill in this cellar raises a difficult question. If no one was living on the site, who dumped the trash into the cellar hole? Did the trash belong to the people who dumped it in, or to the people who had lived in the house before it was torn down?

For the later cellar at the McKean/Cochran Farm, this problem is not so acute as is the case for some other sites. When the Cochrans left the site they moved only a few hundred yards away, and they seem to have continued using the dairy building after they had moved their residence. It was probably the Cochrans themselves who tore down the house to salvage its usable building materials. At some other sites, no residence is known to have been occupied anywhere in the vicinity after the site's abandonment, so the origin of material found in the cellar holes on such sites is even more obscure (Bedell 1997). In addition, the deposits in the cellar present several difficulties. The artifacts recovered include fragments of 64 teacups and 71 saucers, most of them less than 10 percent complete. One can imagine events that would lead to the discarding of a large number of broken teacups at once—for example, a shelf collapse—but the remains of such an accident would be expected to include complete or nearly complete cups. The mass of tiny teaware fragments from Feature 1 cannot be from a single episode, and so it probably represents floor sweepings for a long period of time. For years, possibly for decades, broken cups and saucers were swept out of the McKean/Cochran house and dumped. When the house was torn down, some of these artifacts were put back into the cellar hole. In contrast to the teacups and saucers, the coarse earthenwares and stonewares found were much more complete. These vessels may represent trash that was placed directly in the cellar hole. The clear difference between the teawares and the coarse earthenwares suggests that trash from the hall, where teaware would have been used and stored, was disposed of in different places from the kitchen trash.

The cellar also contained a large number of intact or nearly intact objects, some of them quite unusual. Among the items recovered were a prehistoric stone axe, a cannon ball, a surgeon's lancet, five keys, an intact stoneware ink bottle, and a complete glass case bottle. Fifty-one knives, forks, spoons, and utensil handles were found—an extraordinary number. Knives and forks are rather rare finds at archaeological sites from before the Civil War, and finding even one such item is usually an exciting moment. The presence of these intact items suggests that much of the contents of the

house was dumped into the cellar. The Cochrans must have used their move as an opportunity to dispose of things they no longer wanted or needed, such as keys to broken locks, empty ink bottles, and souvenirs that no longer held any emotional value. Perhaps they were tired of their old tableware and bought a completely new set, tossing their old knives and forks onto the ruin of their old house. A few burned items were found in the cellar, so it is also possible that the house had suffered a small fire in which a number of household objects were burned or damaged by smoke, and these may have been dumped together.

In the center of the cellar, resting on the cellar floor, the excavators identified several piles of window glass, as much as a foot across and four inches tall. A total of 3,763 window glass fragments were counted in Feature 1, most of them from these piles. The piles of window glass were probably created during the demolition of the house. The first thing salvaged from the house must have been the windows. However, many of the panes in the windows were either already broken or were broken during the salvage process. The broken pieces of glass accumulated on the floor of the house and on the ground outside. Because of the danger the glass represented, it was swept up before the salvage continued. The swept-up glass was then dumped in the cellar in discrete piles.

Almost all of the identifiable nails found in the cellar were handwrought. Their presence argues strongly that the house was built before 1800, since machine-cut nails were quite common by 1810.

C. CERAMICS

Potsherds are the particular joy of many archaeologists. Pottery can be made in an infinite variety of forms and decorated in an infinite variety of ways, so it provides an excellent medium for dating and defining past cultures. Pottery also lasts thousands of years in almost any kind of soil. However, despite its usefulness, pottery can mislead as well as inform. For example, ceramic plates first became common in Britain and British North America in the 1760s, and fragments of plates from this period soon became common artifacts. But this does not mean that people had not used plates before 1760; the plates had simply been made out of wood or pewter, materials that do not usually survive in the soil.

More than 13,000 sherds of ceramics were found on the McKean/Cochran Farm Site. The most common were coarse earthenwares and slipwares, pearlware, creamware, white salt-glazed stoneware, faience or delftware, and porcelain. Smaller quantities of whiteware, refined redware, Westerwald stoneware, English brown stoneware, English gray stoneware, and an unusual American-made creamware or early yellowware were also found. The ceramic sherds from Features 1, 4, and 29 received a higher level of analysis than the material from other features, and determinations of the Minimum Number of Vessels were made only for these features. The Minimum Number of Vessels, or MNV, is the smallest number of different plates, pots, or cups that could have produced the fragments found in a particular feature. Determination of the Minimum Number of Vessels is a more useful way of counting ceramics than simply adding up the number of sherds, since it gets us closer to the ceramics as used by the people on the site. In Features 1, 4, and 29, 721 different ceramic vessels were identified. Tables 2 and 3 present these vessels in two

Table 2. Feature Summary of Ceramic Vessels, by Functional Group

	THE LATER CELLAR, 1800-1830		THE EARLY CELLAR, 1750-1800		THE EARLY WELL, 1750-1800	
FUNCTIONAL GROUP	N	%	N	%	N	%
Teawares	160	31	12	11	21	22
Tablewares	160	31	23	21	11	12
Non-Tea Drinking Vessels	18	4	12	11	11	12
Food Preparation	31	6	7	6	10	11
Food Storage	15	3	5	5	5	5
Multifunction	45	9	14	13	17	18
Sanitary	2	<1	2	2	1	1
Activities/Toys	3	<1	.	.	.	.
Pharmaceutical	.	.	1	1	.	.
Unidentified	83	16	32	30	18	19
TOTAL	517		108		94	

Table 3. Feature Summary of Ceramic Vessels, by Ware Group

	THE LATER CELLAR, 1800-1830		THE EARLY CELLAR, 1750-1800		THE EARLY WELL, 1750-1800	
WARE GROUP	N	%	N	%	N	%
Coarse Earthenwares	159	31	56	52	49	52
Refined Earthenwares	234	45	28	26	19	20
Refined Stonewares	34	7	14	13	13	14
Coarse Stonewares	6	1	.	.	.	.
Porcelains	84	16	10	9	12	13
Unidentified	.	.	.	.	1	1
TOTAL	517		108		94	

different ways. In Table 2 they are listed according to the apparent function of the vessels, and in Table 3 they are listed according to the material from which they were made, or the ware type. More detailed listings are provided in the tables for each feature, referred to in the discussions that follow, and in Appendix B.

1. Feature 4, the Early Cellar, 1750-1800

A total of 108 ceramic vessels were identified in Feature 4, the cellar of the first house built on the site (Tables 4 and 5). (Note that the numbers given in Tables 4 and 5, and subsequent vessel tables,

Table 4. The Early Cellar (1750-1800), Minimum Number of Ceramic Vessels, Teawares and Tablewares

	TEAWARES		TABLEWARES				NON-TEA WARES		
WARE TYPE	Cup	Saucer	Plate	Bowl	Porringer	Misc. Tableware	Mug	Misc. Drinking	TOTAL
Porcelain	4	7	.	.	.	.	.	.	11
Creamware	1	.	.	.	.	.	.	.	1
Pearlware	.	.	1	.	.	.	.	.	1
Faience (delft)	.	.	.	9	.	3	.	.	12
White salt-glazed stoneware	.	.	.	.	.	2	.	.	2
"Midlands Mottled" British earthenware	.	.	.	.	.	.	1	1	2
British slipware	.	.	.	.	.	.	.	2	2
Westerwald stoneware	.	.	.	.	.	.	.	6	6
Red-bodied earthenware	.	.	.	.	8	.	1	1	10
TOTAL	5	7	1	9	8	5	2	10	47

Table 5. The Early Cellar (1750-1800), Minimum Number of Ceramic Vessels, Other Functions

	STORAGE	PREPARATION		MULTIFUNCTION			SANITARY		
WARE TYPE	Jar	Milk Pan	Colander	Dish	Pan	Jug	Chamber Pot	Ointment Pot	TOTAL
Faience (delft)	.	.	.	.	.	.	.	1	1
Red-bodied earthenware	5	6	1	.	.	4	2	.	18
Red-bodied slipware	.	.	.	2	5	.	.	.	7
Red-bodied with sgraffito decoration	.	.	.	2	.	.	.	.	2
North Devon sgraffito earthenware	.	.	.	1	.	.	.	.	1
TOTAL	5	6	1	5	5	4	2	1	29

do not include unidentified vessels.) The collection was highly fragmentary: 97 of the vessels were less than 10 percent complete and no vessel was more than 50 percent complete. The vessels were bought and used over a long period of time. They included a North Devon sgraffito pan, a type usually dated to before 1710, and a blue shell-edged pearlware plate made after 1795. Since the fill

from which most of the sherds were recovered appeared to be redeposited, the vessels may have been discarded over a long period as well. Four oriental porcelain teacups and seven saucers were found, as well as a teacup made of clouded creamware, showing that the tenants at the McKean/Cochran Farm were equipped to serve tea with modest elegance. Most of the tableware consisted of bowls made of tin-glazed earthenware, here called faience but also known as delft, and red earthenware porringers (bowls for porridge). Faience was the most common material for fancy tableware before the middle of the eighteenth century, but it became much less common after that time. Only one plate was identified; it was made of shell-edged pearlware. Ceramic plates became quite common after the introduction of creamware in 1762, so the rarity of plates in the feature shows either that most of the contents of the feature date to before that time or that the tenants had traditional tastes in this regard, preferring to eat off pewter or wood. Six Westerwald stoneware drinking vessels were also found. These stoneware mugs and jugs, especially associated with the drinking of beer and cider, were quite common in the eighteenth century, and they remind us that most immigrants from northern Europe thought of these alcoholic drinks as essentials of life; in Europe they provided rations of these beverages even to prisoners and monks. Vessels of white salt-glazed stoneware, dot and combed slipware, and "Midlands Mottled" ware were also identified.

The food storage and preparation vessels were almost all made of red-bodied coarse earthenware. They included five storage jars and six milk pans, a colander, and two chamber pots. Five vessels of a type often referred to as "pie plates" were found. These are here called "dishes," because they appear to have been used for many purposes besides making pies. Dishes or pie plates were often elaborately decorated. Most of those found at the McKean/Cochran Farm were probably made in the Delaware Valley, and one was decorated in a distinctive Pennsylvania Dutch style. Other archaeologists sometimes class these vessels as tablewares (Catts et al. 1995), but because they were used for both preparing and serving food we prefer to classify them as "multifunction" vessels. It is also our practice to identify smaller pans, larger bowls, and larger jugs as "multifunction" vessels, since they could all be used for both preparation and serving, and jugs can also be used for storage.

2. Feature 29, the Early Well, 1750-1800

Feature 29, a well located a few feet away from the early cellar (Feature 4), also dated to the eighteenth century. The top few feet of the well yielded a large number of artifacts, including 94 ceramic vessels (Tables 6 and 7). Ten vessels of creamware and only two of faience were identified, so the collection from this well appears to be somewhat more recent than that from the early cellar, perhaps dating primarily to the 1760s and 1770s. The early well contained twice as much teaware as the early cellar, including eight cups, 12 saucers, and a teapot. A fragment of a creamware vessel molded into a vegetable shape and another fragment from a feather-edged platter were also found, suggesting a table setting of some sophistication. Only one plate, made of creamware, was identified, which suggests that even in the 1770s the tenants were still not using ceramic plates extensively. Five stoneware mugs or jugs were found.

In both the early cellar and the early well the ceramic collections were divided in similar proportions between coarse, utilitarian vessels and refined vessels. In both features the utilitarian vessels were

Table 6. The Early Well (1750-1800), Minimum Number of Ceramic Vessels, Teawares and Tablewares

	TEAWARES			TABLEWARES					NON-TEA		
WARE TYPE	Cup	Saucer	Teapot	Plate	Platter	Bowl	Porringer	Misc. Tableware	Mug	Misc. Drinking	TOTAL
Porcelain	4	7	.	.	.	.	.	1	.	.	12
Creamware	2	3	1	1	1	.	.	2	.	.	10
Faience (delft)	.	.	.	.	.	2	.	.	.	.	2
"Midlands Mottled" British earthenware	.	.	.	.	.	.	.	.	1	.	1
British slipware	.	.	.	.	.	.	.	.	.	1	1
White salt-glazed stoneware	2	2	.	.	1	.	.	.	.	1	6
Westerwald stoneware	.	.	.	.	.	.	.	.	.	2	2
British brown stoneware	.	.	.	.	.	.	.	.	2	2	4
Red-bodied earthenware	.	.	.	.	.	.	2	.	2	.	4
Red-bodied slipware	.	.	.	.	.	1	.	.	.	.	1
TOTAL	8	12	1	1	2	3	2	3	5	6	43

Table 7. The Early Well (1750-1800), Minimum Number of Ceramic Vessels, Other Functions

	STORAGE	PREPARATION		MULTIFUNCTION				SANITARY	
WARE TYPE	Jar	Milk Pan	Pipkin	Dish	Pan	Jug	Bowl	Misc. Multi.	Chamber Pot	TOTAL
Creamware	.	.	.	.	.	.	.	.	1	1
Red-bodied earthenware	4	9	1	.	2	1	.	2	.	19
Red-bodied slipware	.	.	.	5	4	.	2	.	.	11
North Devon earthenware	1	.	.	.	1	.	.	.	.	2
TOTAL	5	9	1	5	7	1	2	2	1	33

mostly coarse red earthenware, although one creamware chamber pot was found. The coarse vessels included nine milk pans, seven smaller pans, five dishes, two bowls, four jars, and a single pipkin or cooking pot.

3. *Feature 1, the Later Cellar, 1800-1830*

Feature 1, the cellar of the second house on the site, produced more than 5,100 ceramic sherds, from which 517 different vessels were identified (Tables 8 and 9). The assemblage includes a large number of very fragmentary vessels, especially the porcelain teawares, as well as several nearly complete vessels, and even an intact stoneware ink bottle. This range of vessel completeness seems to indicate that some of the artifacts in the feature had been deposited somewhere else first and then moved, while some had been discarded directly into the cellar.

Table 8. The Later Cellar (1800-1830), Minimum Number of Ceramic Vessels, Teawares and Tablewares

	TEAWARES				TABLEWARES						NON-TEA	
WARE TYPE	Cup	Saucer	Teapot	Misc. Tea	Plate	Dish	Bowl	Pitcher	Porringer	Misc. Table	Mug	TOTAL
Porcelain	29	38	1	10	.	.	6	.	.	.	.	84
Creamware	7	5	6	.	33	.	8	2	.	2	4	67
Pearlware, painted	22	25	3	.	.	.	9	.	.	1	.	60
Pearlware, shell-edge	.	.	.	.	38	.	.	.	.	2	.	40
Pearlware, dipped	.	.	.	.	.	.	2	1	.	.	.	3
Yellowware/local creamware					7					1		8
Faience (delft)	1	1	.	.	4	1	4	.	.	.	.	11
White salt-glazed stoneware	5	2	.	.	7	.	2	1	.	.	.	17
Red-bodied, engine-turned earthenware	.	.	5	.	.	.	.	.	.	.	.	5
Red-bodied earthenware	.	.	.	.	.	.	5	.	5	.	5	15
Red-bodied slipware	.	.	.	.	.	.	18	.	.	.	.	18
Westerwald stoneware	.	.	.	.	.	.	.	.	.	.	3	3
British brown	.	.	.	.	.	.	.	.	.	1	4	5
British slipware	.	.	.	.	.	.	.	.	.	.	2	2
TOTAL	64	71	15	10	89	1	54	4	5	7	18	338

Table 9. The Later Cellar (1800-1830), Minimum Number of Ceramic Vessels, Other Functions

	STORAGE	PREPARATION		MULTIFUNCTION					SANITARY	HOUSEHOLD ACTIVITIES/TOYS			
WARE TYPE	Jar	Milk Pan	Col-ander	Dish	Pan	Jug	Bowl	Misc. Multi	Chamber Pot	Ink	Toy	Whistle	TOTAL
Creamware									1				1
Pearlware, painted												1	1
Red-bodied earthenware	14	30	1			7		2	1		1		56
Red-bodied slipware				14	21		1						36
Buckley earthenware	1												1
Gray salt-glazed stoneware										1			1
TOTAL	15	30	1	14	21	7	1	2	2	1	1	1	96

The ceramics in the later cellar betray a strong connection to the potters of the Philadelphia region. Several redware bowls found had a distinctive pedestal foot known as the "Philadelphia foot," which identifies them as the product of Philadelphia-area potters (Plate 18). This form, which was copied

PLATE 18: Philadelphia-Style Redware Bowl from the Later Cellar, 1800-1830

PLATE 19: Slip-Decorated Dishes or Pie Plates from the Later Cellar, 1800-1830

from Chinese porcelain bowls, has been found at several sites in Philadelphia (Dent et al. 1997) and one other eighteenth-century site in Delaware at least (Catts et al. 1995). These bowls were thin and well made, and were often decorated, so they were probably used on the table rather than in the kitchen. Other forms made locally in the Delaware Valley include redware pots, bowls, and milk pans and the distinctive slip-decorated dishes or pie plates (Plate 19). Thirty milk pans were identified in the feature. This large total probably indicates that the pans in the cellar were used and broken over a long period of time.

A very large number of teaware vessels were identified in the feature. These vessels were highly fragmentary, most of them less than 10 percent complete. We believe that they represent decades of floor sweepings from the hall and parlor which were dumped back into the cellar when it was abandoned. Despite the long period of time represented by these vessels, the number and variety of vessels is impressive. During the 30 years or so during which the house was occupied, the residents used and broke 64 teacups, 71 saucers, and 15 teapots. These vessels were mostly oriental porcelain and painted pearlware, and included three matched sets of highly decorated pearlware (Plate 20). A large amount of tableware was also found. In the early cellar, which contained primarily mid-eighteenth-century material, only a single plate was found, but in the later cellar, 89 plates were identified. The McKeans and Cochrans owned a large number of tea and table vessels and used them often enough to break them with great regularity. As no fancy vessel types, such as jelly molds, sauceboats, or fruit dishes, were found, the McKeans and/or the Cochrans do not appear to have furnished their tables in the highest style.

PLATE 20: Handpainted Pearlware Teawares from the Later Cellar, 1800-1830

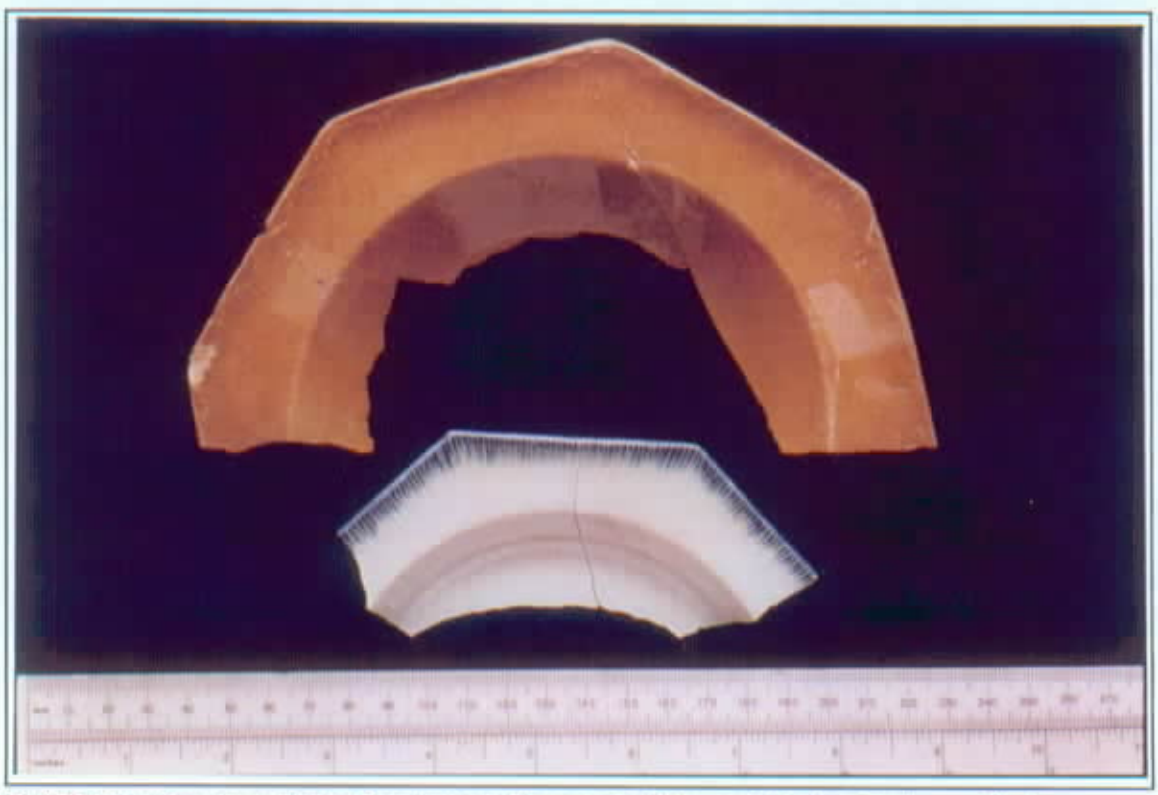

PLATE 21: American-Made Creamware Octagonal Plate and Similar Pearlware Plate

One very unusual type of ceramic was found in the cellar, as well as in the plowzone and at the top of Feature 27, the second well. Sherds from at least 11 plates made of a distinctive yellow earthenware body were found in these contexts. They are unusual because yellow-bodied refined earthenware vessels (commonly called yellowware) do not ordinarily appear on American archaeological sites before the 1830s, and do not appear in significant amounts until after mid-century. The plate bodies are light yellow to buff colored and the glazes are clear. The rims are decorated with shell edging, a style that is associated with English pearlware, creamware, and whiteware plates (Miller 1980, 1991; Noël Hume 1970:116). Shell-edge decorated pearlware and whiteware plates were the most common tablewares during the first half of the nineteenth century. The plates in this collection have two different rim decorations. The first is a simple shell-edge

PLATE 22: Pearlware Whistle in the Form of a Bird

design that consists of a scalloped rim outline with straight lines colored with green. The second rim motif is found on octagonal plates (Plate 21). One of these plates is strikingly colored, with an orange base, a yellow rim, and a green edge. The glaze is clear, and the yellow and orange color variations are probably caused by firing conditions.

These vessels were probably made by American potters in imitation of imported English tablewares. After the American Revolution, various groups of merchants and governmental organizations attempted to encourage American manufacturers to produce goods that would supply local markets with substitutes for goods made in England. These attempts were aided by the effects of Jefferson's 1807 Embargo Act and the blockade of east coast port cities by the British during the War of 1812.

Potters were among the craftsmen-entrepreneurs who tried to manufacture merchandise that would fit the demands of consumers accustomed to English goods (Myers 1980:5-11). A full technical description of these interesting ceramics is given in Appendix C.

Among the other interesting artifacts recovered from the cellar were a pearlware whistle in the form of a bird (Plate 22) and an intact stoneware ink bottle, stamped "Poyntel's Durable Ink" (see Plate 16). No ink manufacturer named Poyntel has yet been identified, but the vessel's form suggests that it is American, so the maker may have been a Philadelphia or Baltimore manufacturer.

4. Some Comparisons

a. Time Comparisons

One of the goals of the research program at the McKean/Cochran Farm was to evaluate theories of a behavioral revolution in the eighteenth century. According to Carson (1994), Shackel (1993), and others, a comparison of the consumer goods found on sites from late in the eighteenth century to those from early in the century ought to reveal major changes in the ways people worked, cooked and ate, and cared for their bodies. The artifacts from the McKean/Cochran Farm have therefore been systematically compared to those from two Delaware sites of the mid-eighteenth century and to one site from early in the century. The two mid-century sites are the William Strickland Plantation Site in Kent County, occupied from 1726 to 1764 (Catts et al. 1995), and the Charles Robinson Plantation, just across the Appoquinimink River from the McKean/Cochran Farm, occupied from about 1740 to 1776 (Thomas et al. 1994). Both sites were occupied by families who were well-off but not conspicuously wealthy or politically prominent, and the ceramics from both sites were studied in considerable detail. The early eighteenth-century site is the John Powell Plantation in Kent County, occupied from about 1690 to 1735 (Grettler et al. 1995). John Powell was heavily in debt, and though he tried to buy his 300-acre farm he never effectively controlled it, and he was probably of somewhat lower status than William Strickland, Charles Robinson, or Letitia McKean.

It is perhaps appropriate to begin the analysis with a discussion of change over time within the McKean/Cochran Farm itself. Although excavation of the site began with the idea that it dated no earlier than about 1770, analysis of the ceramics from the early cellar showed that it probably dates to 1750, and possibly even earlier. Therefore a comparison of the ceramics from the early cellar and well (Feature 4 and Feature 29) with those from the later cellar (Feature 1), which dates to about 1825, covers at least 75 years of Delaware history. Overall, the collections are quite similar. All three features yielded the same range of vessel types, including teacups and saucers, plates, bowls, mugs, storage jars, dishes, milk pans, smaller pans, and chamber pots. Differences emerge only in the details. Compared to the earlier features, the later cellar contained more refined wares and fewer coarse, utilitarian vessels. In the early features coarse earthenwares made up 52 percent of the vessels, while in the later cellar they made up only 31 percent. The difference was largely caused by the 89 plates found in the later cellar, since only a single plate was found in each of the eighteenth-century features. By 1830 ceramic plates made of pearlware or whiteware had almost

completely replaced pewter and wooden plates, and sherds of these plates are among the most common archaeological artifacts from the period.

Comparison of the ceramics from the McKean/Cochran Farm to those from the William Strickland and Charles Robinson plantations reveals no dramatic change in ceramic use during the second half of the eighteenth century. The ceramics from William Strickland's plantation closely resembled those from the early cellar of the McKean/Cochran Farm. The collection from the William Strickland Plantation included teacups, saucers, and teapots, so tea drinking was already well established in Delaware by the middle of the eighteenth century. Strickland also owned many vessels produced by redware potters in the Delaware Valley, including bowls with the distinctive "Philadelphia foot," milk pans, porringers, and slip-decorated dishes and pans. Strickland actually owned more ceramic plates than the tenants at the McKean/Cochran Farm, including four made of refined stoneware and seven of faience. The Charles Robinson Plantation Site yielded a large quantity of teaware, including more than 50 teacups, several of them Chinese porcelain. More than 30 plates were found, most of them creamware. The Robinsons owned the same range of locally made red earthenware vessels, especially slip-decorated dishes or pie plates, of which more than 100 were found. Taken together, the collections from the three sites suggest that Delaware farmers shared a common attitude with respect to ceramics. At all three farms, with occupations spanning the century from 1730 to 1830, a wide range of coarse redware dishes were used in the dairy and the kitchen, and the table was set with a combination of imported refined earthenwares and locally made slipware dishes.

More significant changes appear when we compare the sites from mid-century to the John Powell Plantation, abandoned by 1735. First, the collection from the John Powell Plantation Site was much smaller than collections from the later sites. Although the site was occupied for about 40 years, only about 1,300 sherds and 56 identified vessels were found. The great increase in the number of ceramic vessels found on North American sites from the second half of the eighteenth century has been noted before (Deetz 1972), and it seems to represent both an increase in the availability of ceramics, from improved trade and growth in local manufacture, and real changes in how ceramics were used. In the eighteenth century ceramics came to replace wood, metal, and leather for a variety of applications, including drinking vessels, bowls, and, finally, plates. The John Powell Plantation Site yielded no refined tea vessels of the type found at later sites. The only vessels from the site identified as teawares were five Staffordshire slipware cups, and these cups were probably used for drinking liquids other than tea. If the residents of the John Powell Plantation Site drank tea at all, it was not as important in their lives as it was for Delawareans later in the century. Seven plates were found, six of them faience or delft. The assortment of coarse redware vessels found included seven coarse redware milk pans and seven crocks or butter pots. The use of ceramics in dairying was traditional in Britain, going back to the Middle Ages, so the discovery of these vessels at the site was expected. However, the quantity of ceramic dairying vessels found at the site was much lower than would be found at the later sites. One item completely missing from John Powell's kitchen was the slip-decorated dish or pie plate so common on the later sites; the Delaware Valley industry that produced these vessels seems not to have developed until after 1730.

b. Regional Comparisons

A second goal of the research program at the McKean/Cochran Farm was to compare the site with others within and beyond the Delaware Valley region to see if regional cultural patterns could be observed. The sites chosen from within the Delaware Valley were the Strickland, Robinson, and Powell plantation sites, referred to above; the Benjamin Wynn tenant farm in Kent County, circa 1765 to 1822 (Grettler et al. 1996); The Whitten Road Site, a tenant farm in New Castle County, occupied from 1760 to 1830 (Shaffer et al. 1988); the Darrach Store Site in Kent County, occupied by tenants from 1775 to 1860 (De Cunzo et al. 1992); deposits from the parsonage of Old Swedes Church in Wilmington, dated to 1757-1768 (LeeDecker et al. 1990); the John Tyndall Site, a farm in Mercer County, New Jersey, dating to circa 1720 to 1740 (LBA 1986c); and a privy at the New Market Street Site in Philadelphia, circa 1765 to 1775 (described in Thomas et al. 1994).

The region for which the most archaeological data on eighteenth-century sites are available is the Chesapeake of Virginia and Maryland, and we have compared the data from the McKean/Cochran Farm and other Delaware Valley sites with data from a number of Chesapeake sites. The Chesapeake sites, chosen solely on the basis of the availability of data, were a group of sites at Kingsmill in James City County, Virginia (Kelso 1984), including the Pettus Plantation (ca. 1660-1680), the Utopia tenant farm (ca. 1680-1700), the Bray Plantation (ca. 1720-1750), and two slave quarters—the Kingsmill Quarter (ca. 1780-1800) and the North Quarter (ca. 1780-1800); the John Hicks Farm in St. Marys County, Maryland, 1723-1743 (Stone et al. 1973); the mid-eighteenth-century Notley Hall Site, also in St. Marys County (Pogue 1981); two contexts at Shirley Plantation in Charles City County, Virginia (Reinhart 1984); three contexts at Oxon Hill, a plantation in Prince Georges County, Maryland (Garrow and Wheaton 1986); and five contexts at Thomas Jefferson's Monticello—three slave houses (Gruber 1990), a tenant house (Heath 1991), and from around the house foundations (Heath and Patten 1992).

Overall, the collections are broadly similar. All of the sites yielded coarse and refined ceramics, all of the sites from after 1730 yielded teawares, and all of the sites from after 1770 yielded ceramic plates. Both the Chesapeake and the Delaware Valley residents were clearly members of a transatlantic European culture. The most salient difference concerns the amount of coarse earthenware found on the sites (Tables 10 and 11). In the late seventeenth and early eighteenth centuries coarse earthenwares were the most common ceramics on all sites in both regions. However, after 1740, when refined ceramics such as white salt-glazed stoneware and creamware became available, the amount of coarse earthenware on Chesapeake sites fell dramatically. By 1800, coarse earthenware was rare. This pattern holds true for all of the Chesapeake sites examined, whether the homes of great planters, small yeomen, or slaves. In the Delaware Valley, by contrast, coarse earthenware remained common well into the nineteenth century.

Part of the difference in the amount of coarse earthenware in the collections from the Chesapeake and Delaware Valley sites may be accounted for by the presence of a thriving redware industry in and around Philadelphia; if coarse red earthenwares were cheaper and more easily available in the Delaware Valley, that could explain why they were more common. However, other factors may

Table 10. Ceramics from Chesapeake Sites, by Ware Type

SITE	DATE	TYPE	COARSE EARTHEN-WARES	COARSE STONE-WARES	REFINED WARES	PORCELAIN	TOTAL NUMBER OF VESSELS
Pettus[1]	1660-1680	Plantation	59.4	.	40.1	0.6	352
Utopia[2]	1680-1700	Tenant Farm	58.3	.	41.7	.	60
John Hicks[3]	1723-1743	Farm	55.2	1.4	35.7	7.6	277
Notley Hall[4]	1720-1750	Farm	64.9	.	30.6	4.1	222
Bray[5]	1720-1750	Plantation	16.8	.	71.4	11.8	119
Oxon Hill[6]							
Feat. 5000	1750-1800	Plantation	18.9	10.8	56.8	13.5	37
Well, Strat. B,C	1750-1770	Plantation	20.2	5.3	58.5	16.0	94
Well, Strat. A	1750-1840	Plantation	22.5	3.4	60.7	13.5	178
Kingsmill Qtr.[7]	1780-1800	Slave Quarter	6.2	8.4	64.4	21.0	186
North Qtr.[8]	1780-1800	Slave Quarter	6.8	14.5	72.1	6.6	137
Shirley Plantation[9]							
Hill House	1750-1830	Plantation	3.4	1.1	79.6	15.9	345
Root Cellar	1760-1830	Plantation	4.6	4.8	58.7	31.9	542
Monticello							
Foundations[10]	1780-1830	Plantation	5.5	3.9	57.0	32.8	128
Monticello r[11]	1780-1830	Slave House	2.6	7.7	69.2	20.5	39
Monticello s[11]	1780-1830	Slave House	4.2	8.7	67.6	19.6	312
Monticello t[11]	1780-1830	Slave House	4.8	10.6	60.8	23.8	273
Stewart/Watkins[12]	1800-1810	Tenant House	1.6	5.6	80.0	12.8	125

Sources: [1,2]Kelso 1984; [3]Stone et al. 1973; [4]Pogue 1981; [5]Kelso 1984; [6]Garrow and Wheaton 1986; [7,8]Kelso 1984; [9]Reinhart 1984; [10]Heath and Patten 1992; [11]Gruber 1990; [12]Heath 1991.

Table 11. Ceramics from Delaware Valley Sites, by Ware Type

SITE	DATE	TYPE	COARSE EARTHEN-WARES	COARSE STONE-WARES	REFINED WARES	PORCELAIN	TOTAL NUMBER OF VESSELS
John Powell[1]	1690-1735	Farm	72.5	.	27.5	.	51
John Tyndall[2]	1720-1740	Farm	69.5	5.7	22.4	2.3	174
Wm. Strickland[3]	1726-1764	Farm	65.5	4.4	25.8	4.4	229
Charles Robinson[4]	1720-1776	Farm	57.2	2.1	35.8	4.9	528
Old Swedes[5]	1757-1768	Town Parsonage	51.2	.	38.4	10.5	86
McKean/Cochran							
Early Cellar	1750-1790	Tenant Farm	51.9	.	38.9	9.3	108
Early Well	1750-1790	Tenant Farm	53.3	.	34.8	13.0	92
New Market St.[6]	1765-1775	Urban Privy	36.7	0.7	44.9	17.6	403
Benjamin Wynn[7]	1765-1822	Tenant Farm	45.4	0.5	53.7	0.5	218
Whitten Road[8]	1760-1830	Tenant Farm	61.5	1.6	33.3	3.6	384
Darrach Store[9]	1775-1860	Tenant House	58.6	1.6	35.9	4.0	251
McKean/Cochran							
Later Cellar	1800-1830	Farm	30.8	1.2	51.8	16.2	517

Sources: [1]Grettler et al. 1995; [2]LBA 1986c; [3]Catts et al. 1995; [4]Thomas et al. 1994; [5]LeeDecker et al. 1990; [6] Thomas et al. 1994; [7]Grettler et al. 1996; [8]Shaffer et al. 1988; [9]De Cunzo et al. 1992.

have been at work. To search for these other factors we compared tables of vessel functions from sites in both regions. (Table B.2 and Table B.3 in Appendix B list the vessels from sites in the two regions.) The comparison is difficult because of differences in the ways archaeologists classify and describe ceramic vessels, but the various classification schemes have enough in common to make some general conclusions possible. The coarse earthenware vessels from Delaware Valley sites generally fall into the categories of Food Storage, Food Preparation or Kitchen, Dairy, and Serving or Tableware. Coarse earthenware serving vessels, such as the decorated "pie plates" made in Pennsylvania, were virtually unknown in the Chesapeake after 1750, where they had been entirely replaced by imported refined wares. The only one found at any of the sites in the sample was from the small Stewart/Watkins tenant house at Monticello, and one of the residents at that house was William Stewart, who had moved to Monticello from Philadelphia and had probably brought his dish with him (Heath 1991). Coarse earthenware storage vessels have been found on most Chesapeake sites, and they are supplemented by coarse stonewares; the rise of American stoneware manufacture helps to explain the lack of coarse earthenware in the Chesapeake region. However, a great difference remains in the categories of Food Preparation or Kitchen wares and Dairy vessels. Milk pans were identified on all the rural sites studied in the Delaware Valley, but many of the Chesapeake sites yielded none. The keeping of dairy cattle appears to have been almost universal in the Delaware Valley, but after 1750 it was less common in the Chesapeake. The difference in Food Preparation or Kitchen vessels is even more striking. These vessels are found in great numbers in the Delaware Valley, but are rare in the Chesapeake region; many sites produced none. This discrepancy seems to indicate a real difference in how people in the two areas prepared and cooked their food. Where people in the Delaware Valley used ceramics, people in the Chesapeake must have used metal or wooden vessels.

These observations show that there were clear differences between the material culture of the Chesapeake and the Delaware Valley regions. The ceramic data also suggest that these differences were not present from the beginning of the colonies, but developed over time. When the colonists arrived from the Old World in the seventeenth and early eighteenth centuries they brought with them broadly similar ceramic traditions, and they were dependent on imports for most of their dishes. Almost all of the colonists were farmers. In the eighteenth century, the economies of the Middle Atlantic and New England colonies diversified much more than did those of Maryland and Virginia, where the plantation system continued to focus on the production of tobacco and grain for export and local manufacturing never really developed. There were potters in the southern colonies, but no pottery-making traditions as strong as the one that developed in the Delaware Valley. After 1740, when technological advances in Britain produced new kinds of refined ceramics, people in the two regions responded differently to the new goods. People everywhere in America bought and used white salt-glazed stoneware, creamware, and pearlware, particularly for serving tea, but in the Delaware Valley people continued to buy and use large quantities of locally made coarse earthenwares. Decorated slipware dishes, which had gone completely out of fashion in the Chesapeake, remained on the tables of well-to-do farmers in the Delaware Valley. These differences seem to have reached even into the kitchen, one of the most conservative realms of any culture. (The conservatism of cooking techniques in most cultures is one reason we speak of "hearth and home" as the seat of culture, and may explain why we still have "Chinese food" and "Mexican food," when

phrases like "Japanese car" or "Malaysian stereo" have ceased to mean much.) A comparison of ceramics from the two regions suggests that by 1800 cooking techniques used by people in the Delaware Valley were different from those used by people in the Chesapeake region, a clear sign that different cultural traditions had appeared.

D. GLASS

1. Glass from the McKean/Cochran Farm

The collection of bottle and vessel glass from the McKean/Cochran Farm included about 2,700 fragments, much smaller than the ceramic collection. About half of this glass came from green wine bottles, and most of the rest was unidentified. However, the collection did include 131 fragments from tumblers (drinking glasses) and 36 fragments from stemmed goblets or wine glasses (Plate 23).

PLATE 23: Stems from Wine Glasses, from Features 4 and 1, the Cellars

The glass from the two cellars, the early well, and the dairy (Features 1, 4, 29, and 15) was analyzed in more detail, which included Minimum Number of Vessel calculations (Table 12). The early cellar produced parts of six tumblers, all with etched designs. Some of these designs are quite elaborate, as Figure 21 shows, and can be dated to after 1760 (Spillman 1982:43). A stemmed glass with a design that probably dates to before 1740 (Noël Hume 1970:180) was also found in the early cellar, and at least one of the wine bottles was also made before 1740, so the glass from this cellar presents the same long time span as the ceramics. Most of the glass from the later cellar was highly fragmentary, like the ceramic teawares and tablewares. One interesting glass vessel was a very pale green bottle recovered from the early well, illustrated in Figure 22.

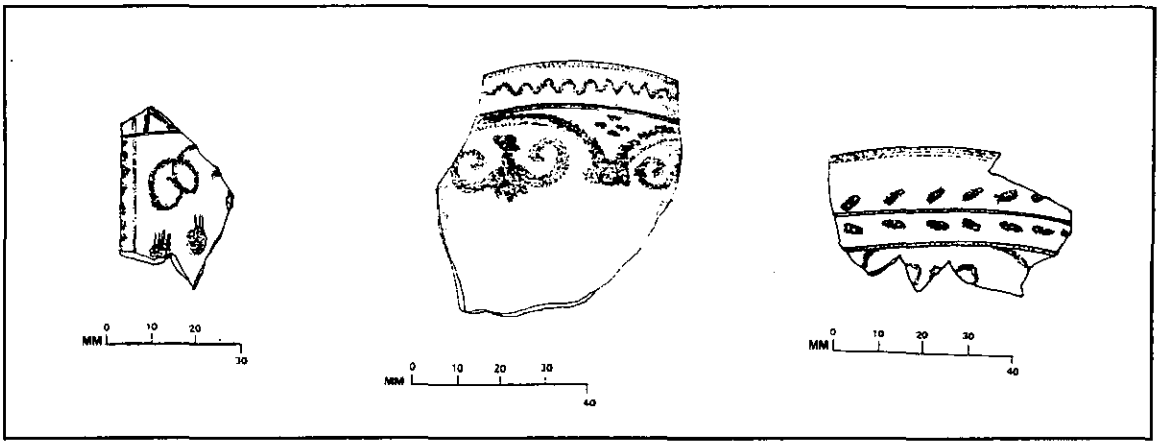

FIGURE 21: Drawings of Decorations on Glass Tumblers

Table 12. Summary of Glass Vessels, by Feature

FUNCTIONAL CATEGORY	THE LATER CELLAR, 1800-1830	THE EARLY CELLAR, 1750-1800	THE DAIRY, 1800-1840	THE EARLY WELL, 1750-1800	TOTAL
Bottle Glass					
Beverage					
Wine/Liquor	12	4	2	3	21
Pharmaceutical					
Snuff	1	.	.	.	1
Miscellaneous					
Vial	10	5	1	2	18
Unidentified					
Bottle/Container	8	3	2	.	13
Table Glass					
Drinking Vessel					
Tumbler	4	6	.	1	11
Stemware	3	3	.	.	6
Unidentified					
Tableware	2	1	2	.	5
Table-Associated	1	1	.	.	2
Other Glass					
Unidentified	3	.	1	.	4
TOTAL	44	23	8	6	81

2. *Some Comparisons*

a. Time Comparisons

There were few differences between the early and late deposits on the site, or between the McKean/Cochran Farm and earlier eighteenth-century sites in Delaware. While the ceramic

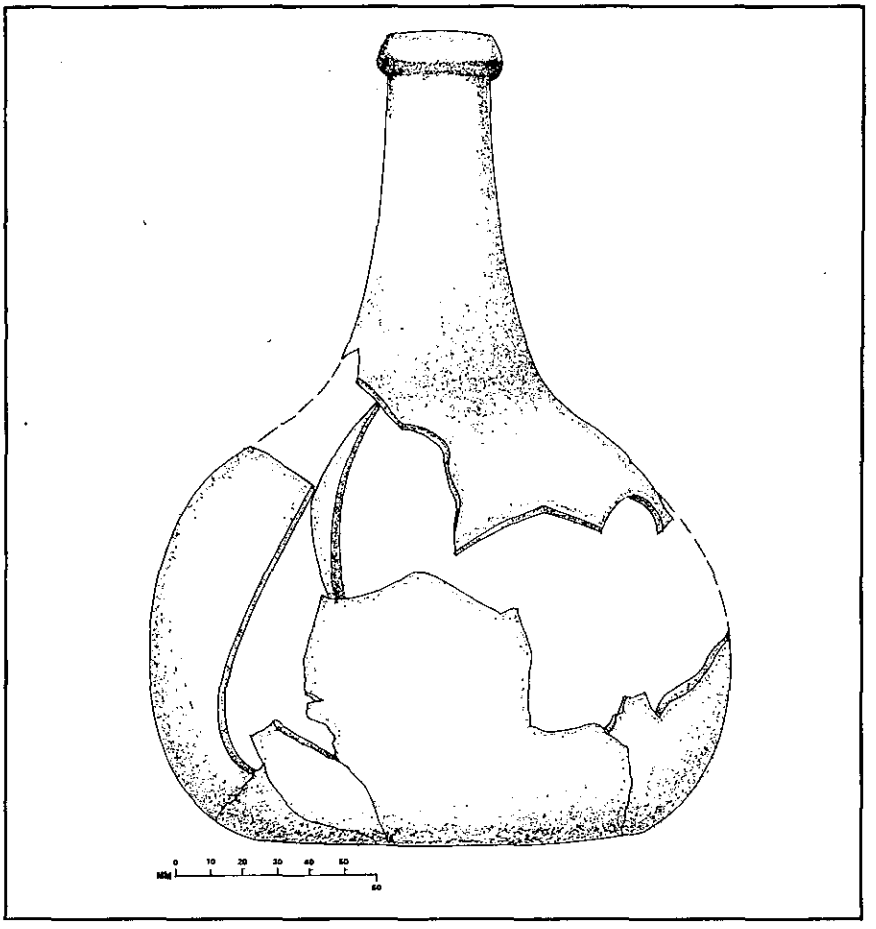

FIGURE 22: Pale Green Bottle from the Early Well, 1750-1800

collection showed much more material and a greater variety in later contexts than in earlier ones, this difference was not nearly so pronounced for the glass vessels. The early cellar produced more tumblers than the later cellar and the same number of stemmed goblets. Stemmed drinking vessels were also found at the William Strickland, Charles Robinson, and John Powell plantation sites, and in the Chesapeake they have been found in large numbers at sites dating to the seventeenth century (Doepkins 1991; Noël Hume 1970). The presence of these stemmed goblets on sites throughout the seventeenth and eighteenth centuries is important, because it reminds us that while the tea ceremony was a new introduction of the eighteenth century, Europeans had long practiced a rich ceremony associated with the drinking of wine. Teacups were a new introduction, but refined glassware and decorative drinking vessels were not new. Although the collection of glass from the McKean/Cochran Farm is very similar to collections from earlier sites, great changes in the use of glass did take place after the McKean/Cochran Farm was abandoned. By the end of the nineteenth century, new manufacturing techniques had made glass much cheaper and more versatile than it had been earlier, and it is usually the most common artifact type on sites dating from after the Civil War.

b. Regional Comparisons

A comparison of the glass from eighteenth-century sites in the Delaware Valley to collections from the Chesapeake does not reveal any major differences in the types of material or the vessel forms encountered. However, there is an obvious difference in the amount of glass found. Compared to similar Chesapeake sites, Delaware Valley sites simply do not yield very much glass. At the McKean/Cochran Farm the number of glass fragments was about 20 percent of the number of

ceramic sherds, and the number of glass vessels identified was only about one-eighth as many as the ceramic vessels. Similar ratios are found throughout the region. For example, at the William Strickland Plantation, 36 glass vessels were identified, compared to 237 ceramic vessels, and at the Charles Robinson Plantation glass accounted for only 2 percent of the total artifacts. In the Chesapeake region, glass was much more common overall, and one encounters eighteenth-century sites on which glass outnumbers ceramics. At Oxon Hill, a plantation in Prince Georges County, Maryland, more than twice as much glass as ceramics was found, even in the most tightly dated eighteenth-century deposits (Garrow and Wheaton 1986). Glass also outnumbered ceramics at Middle Plantation in Maryland (Doepkins 1991). Much of this glass came from what are usually called "wine" bottles, although they have been found to contain many other substances, including paint and ink. The difference may arise from the greater dependence of Chesapeake farmers on direct trade with England, which was more likely to include things shipped in these bottles, or a preference in the Chesapeake for wine sold in bottles rather than casks (South 1977:178), but it may actually indicate that Chesapeake planters drank more wine than Delaware Valley farmers did.

E. SMALL FINDS

Ceramics, glass, building materials, and bones are usually the main categories of artifacts recovered from a historic archaeological site, but many other kinds of objects are also found. We lump these into the amorphous category of "small finds." The McKean/Cochran Farm produced a wealth of fascinating objects, full of information about the residents' lives. The collection includes both an ordinary assortment of lost and broken items from across the site and a remarkable assemblage of intact items from Feature 1, the cellar of the second house on the site (Table 13).

The most common item in the small finds category were fragments of white clay tobacco pipes. More than 450 pieces of pipes were found, and they were found in quantity in both the early and the late features. Tobacco pipes are common on all colonial sites in North America, reminding us that smoking was nearly universal. Tobacco pipes can be dated because they changed shape over time. The pipe bowls grew larger and went through several stylistic phases, and the diameter of the hole that carried smoke through the stem steadily shrank. The first pipes found in North America had tiny bowls no bigger than a thimble and holes in the stems 8/64 or 9/64 of an inch in diameter; by 1750 the pipe bowl was four or five times as big, but the diameter of the hole in the stem had shrunk to 4/64 or 5/64 of an inch. The experience of smoking must also have changed greatly, from an intense "light it up and gulp down the smoke" to a slower, more even burn. The pipes from the McKean/Cochran Farm were all late eighteenth-century styles, with large bowls and small stem-hole diameters. Little tobacco was grown in central Delaware in the 1750 to 1830 period, so the McKeans and Cochrans had to buy theirs.

The McKean/Cochran Farm was occupied during the American Revolution, and several objects were found at the site that suggest an association with the Continental Army. Three regimental buttons were found, two in the later cellar (Feature 1) and one in Feature 53, a small pit. The button from Feature 53 was embossed with the letters "RIR," indicating the Rhode Island Regiment (Calver and Bolton 1950:91). One of the buttons from Feature 1 showed an eagle grasping arrows in one talon

Table 13. Summary of Small Finds, by Feature

ARTIFACT GROUP/ Type	LATER CELLAR	EARLY CELLAR	DAIRY	EARLY WELL	OTHER CONTEXTS	TOTAL
Kitchen						
Knives	22	.	1	.	.	23
Forks	2	.	.	.	3	5
Spoons	7	1	.	.	1	9
Teaspoons	1	.	.	.	.	1
Unidentified Utensils	19	3	.	1	1	24
Iron Kettle Fragments	4	.	2	.	.	6
Metal Can Fragments	.	.	61	.	.	61
SUBTOTAL	55	4	64	1	5	129
Furnishings						
Clock Parts	2	.	.	.	.	2
Candlesticks	2	.	.	1	.	3
Furniture Hardware	13	1	.	.	2	16
Door Parts	11	.	2	.	3	16
SUBTOTAL	28	1	2	1	5	37
Arms						
Ammunition	1	2	.	.	1	4
Gunflints	2	1	.	.	.	3
SUBTOTAL	3	3	.	.	1	7
Clothing						
Gilt Buttons	4	1	1	1	3	10
Military Buttons	2	.	.	.	1	3
Other Buttons	68	2	3	4	14	91
Shoe Buckles	9	.	.	.	1	10
Belt Buckles	1	2	.	2	.	5
Other Buckles	12	1	2	2	4	21
SUBTOTAL	96	6	6	9	23	140
Personal						
Coins	3	2	.	.	2	7
Keys	5	.	1	.	.	6
Jewelry	.	2	.	.	1	3
Comb/Hairbrush	8	.	.	.	.	8
Surgeon's Lancet	1	.	.	.	.	1
Pipestem Fragments	94	78	16	51	52	291
Pipe Bowl Fragments	81	22	11	12	45	171
SUBTOTAL	192	104	28	63	100	487
Activities						
Toys	2	.	.	.	.	2
Hand Tools	9	1	.	2	4	16
Farm Tools	2	.	.	1	1	4
Thimbles	3	.	.	.	1	4
Straightpins	18	1	.	1	1	21
Livestock Related	15	.	3	1	2	21
Musical	1	.	2	.	.	3
Barrel Hoops	8	.	.	7	.	15
Padlocks	1	.	.	1	.	2
Other Activities	86	4	.	7	17	114
SUBTOTAL	146	6	13	20	27	208
TOTAL	520	124	109	94	161	1,008

PLATE 24: Surgeon's Lancet or Fleam, from the Later Cellar, 1800-1830

and an olive branch in the other, with five stars above and a branch below; the other showed an eagle surrounded by concentric circles. A brass bracket that may have been part of a musket stock was also found in Feature 1, along with a single small cannon ball (see Plate 16). It is hard to think of any use for one cannon ball, so this must have been a souvenir. Perhaps the most unusual object was a surgeon's lancet or fleam, a blood-letting tool, also found in the later cellar (Plate 24). This particular lancet had several blades contained within a box handle, rather like a Swiss Army knife, and it was identical to lancets issued to surgeons by the Continental Army (Neumann and Kravic 1989:187). None of the residents at the McKean/Cochran Farm is known to have served in the Continental Army, but the presence of these objects certainly argues strongly that one did. An obvious candidate is Letitia's second husband, William Clark, but since the army included several officers named William Clark, this conjecture cannot be verified. These souvenirs also suggest something of a sentimental attachment to the war. The American Revolution was a critical event, not only in the life of the nation, but also in the life of a particular young man associated with the site who saved mementos of his service for years afterwards. However, the sentiment toward these items does not appear to have endured among the future residents at the farm, who eventually tossed the buttons (perhaps along with the garments to which they were attached) and the cannonball into the trash.

One object that reminds us of the long journeys many artifacts took from their place of manufacture to the place where they were found was a piece of turned window lead found in Feature 1, the cellar of the second house on the site. Turned lead was used in casement windows to hold the small,

diamond-shaped glass panes in place. A casement window was made as a unit, and whole windows were shipped intact for sale in America. Because of guild regulations, the date of manufacture was impressed onto the lead during the milling process that created the turned lead. This date can sometimes be found by unrolling the folded edges of the turned lead. When one of the turned lead fragments from the cellar was unrolled, the date 1677 became visible. It will be remembered that the second house at the McKean/Cochran Farm had been constructed around 1800, so this window was already over a century old when it was incorporated into the structure. An earlier house had stood on the farm, but that house was probably built around 1750, when the window was already over 70 years old. In 1677, or soon afterwards, this window must have been built into some other, unknown house that has probably long since disappeared. This house was probably in Delaware or Pennsylvania—a used window seems an odd thing to ship across the Atlantic—but it may have been in England. When that house was torn down, the window was saved for use in some other house, and so on through perhaps any number of houses until it ended up at the McKean/Cochran Farm.

PLATE 25: Tableware from the Later Cellar, 1800-1830

Two door locks and one padlock were found in the later cellar, and a second padlock was found in the dairy. Six keys were also found on the site, five of them in the later cellar. Keys and locks are common items on eighteenth-century farm sites, and their presence reminds us that crime is not an invention of contemporary urban life. Theft, robbery, cattle rustling, and murder were all major problems in the eighteenth century. Homicide rates, which are the only crime statistics that can be meaningfully compared over such long periods of time, seem to have been about the same in 1800 as they are today (Hanawalt 1979; Stone 1983). We of the twentieth century fear crimes committed

by outsiders or strangers for the most part, so we put our locks on the doors of our houses to keep strangers out; but wealthy people in the eighteenth century had to worry about theft by the servants or slaves who lived in their own houses. To help combat this problem they bought padlocks, like those found at the McKean/Cochran Farm, and locking chests, which are common in contemporary household inventories. The common image of the mistress of a large farm included a ring of keys dangling at her waist, and a few women were even buried with their keys (Noël Hume 1982).

A particularly interesting category of small finds from the McKean/Cochran Farm consisted of the eating utensils. The site produced a total of 62 utensils, including 23 knives, five forks, nine spoons, and a teaspoon. Fifty-one of these utensils came from Feature 1, and many of them seem to have been intact when they were thrown away (Plate 25). Such large deposits of discarded objects have been found in other places. Archaeologist James Deetz found deposits in both South Africa and New England, dating to the 1830s, that included dozens of complete plates, bowls, teacups, and other table and tea dishes, and after mulling over these finds for years he decided that they must represent the rise of fashion in table settings. The only reason he could imagine for the disposal of complete sets of intact dishes was that they had simply gone out of fashion (Deetz 1977). The presence of such deposits on sites from the 1830s implies, to Deetz, that fashion had become very important for the purchasing and use of dishes, important enough for some people to discard perfectly good sets of dishes when they were no longer thought to be up to date. Something similar could have happened with the knives, forks, and spoons at the McKean/Cochran Farm. The fork was a new introduction to the later seventeenth century, and for decades just having a knife, fork, and spoon for each diner might have been seen as sufficiently elegant. In the nineteenth century, however, forks became commonplace, so to achieve elegance required not only forks, but matched sets of decorative flatware. The old utensils, when they became an embarrassment, were retired, and when it came time to move they were thrown away rather than being carried to the new house. However this particular collection of 51 utensils came to be thrown away, the discard of these pieces certainly indicates that dining utensils were becoming more common, since no earlier Delaware site has yielded more than a dozen such items.

Elaborate dining was an innovation of the eighteenth century, but personal vanity is eternally human; among the oldest metal objects in the world are mirrors. Evidence of primping found at the McKean/Cochran Farm includes jewelry parts, such as a small gilded chain, the pin for attaching a broach, and what may be a locket, as well as gilt buttons and pieces of combs and hair brushes. No pieces of toothbrushes were found, so we lack evidence that the residents had adopted that late eighteenth-century innovation in personal hygiene.

One of the ways in which modern houses are quite different from medieval houses is in the amount of furniture and the number of different kinds of furniture used. A house in fifteenth-century England might contain only a mattress, benches, a table, and a storage chest, and must have looked strangely bare by our standards. The seventeenth and eighteenth centuries saw a great increase in the amount and variety of furniture in the houses of wealthy people, so that by 1800 rooms in the better houses looked much more like they do today. For example, the Reverend John Thompson,

PLATE 26: Furniture Hardware from the Later Cellar, 1800-1830

Letitia McKean's first husband, owned two Mahogany bureau tables (what we would call dressers), a dressing table, a breakfast table, a walnut dining table, a writing desk, two beds with wooden frames, and an unspecified number of chairs (NCC Estate Files, John Thompson 1795). However, poorer and even some middle-class people continued to get by with very little furniture. Charles Robinson was a well-off farmer, but according to his 1764 inventory his four-room house held only a feather bed, a cattail bed, two chests, nine old chairs, and two pine tables (Thomas et al. 1994). Sometimes probate inventories, our only good source for the furniture of poor and middling people, are very vague about furniture, listing only "furniture in the front room" (Catts et al. 1995:145). We would therefore like to learn more about household furnishings from archaeology. Unfortunately, most household furniture was made of wood in the eighteenth century, so discarded pieces rarely survive for archaeologists to find. However, some pieces of furniture, especially chests and chests of drawers, had many metal parts, and these can survive. Sixteen pieces of furniture hardware were found at the McKean/Cochran Farm, 13 of them in Feature 1. These objects included drawer pulls, which show that the household included a desk or a chest of drawers, and several decorative brass elements, which argue for substantial expenditure on furniture (Plate 26). One item of luxury furniture that was first distributed widely in the eighteenth century was the clock. Display of clocks indicated not only the wealth to afford these expensive items, but a modern, up-to-date concern with clock time, as opposed to the traditional daily and seasonal rhythms of the medieval world (Shackel 1993). Two clock parts were found at the McKean/Cochran Farm, both in Feature 1.

A wide variety of metal tools was found at the McKean/Cochran Farm, and, again, the majority were from the later cellar. The tools included two axes, two sickles, a shovel, a pitchfork, a file, an auger, a saw set, and an ash shovel. Two hoes were found, one in Feature 4 and one in Feature 2, as well as two chisels, a third axe, and a screwdriver. Most people are surprised to see a screwdriver on an eighteenth-century site, but the screw was an ancient invention and in colonial times these tools were not particularly rare. Another item that to us looks out of place among colonial artifacts is a brass pipe spigot found in the early cellar. The Romans had of course developed sophisticated plumbing nearly two thousand years before, so such things were hardly an innovation. Since the farm had no running water, the spigot must have been on a barrel or water tank.

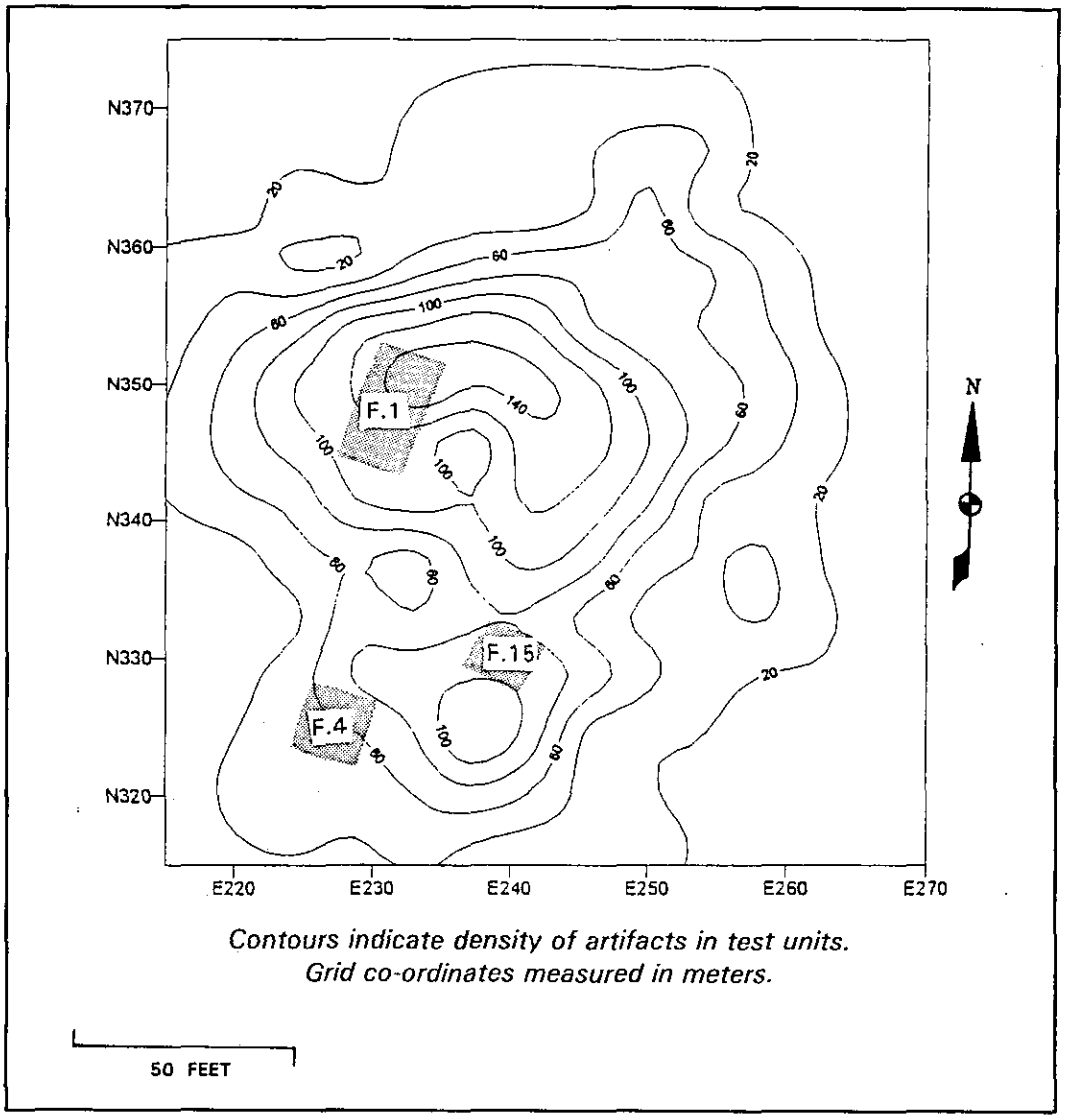

FIGURE 23: Distribution of Historic Artifacts in the Plowzone

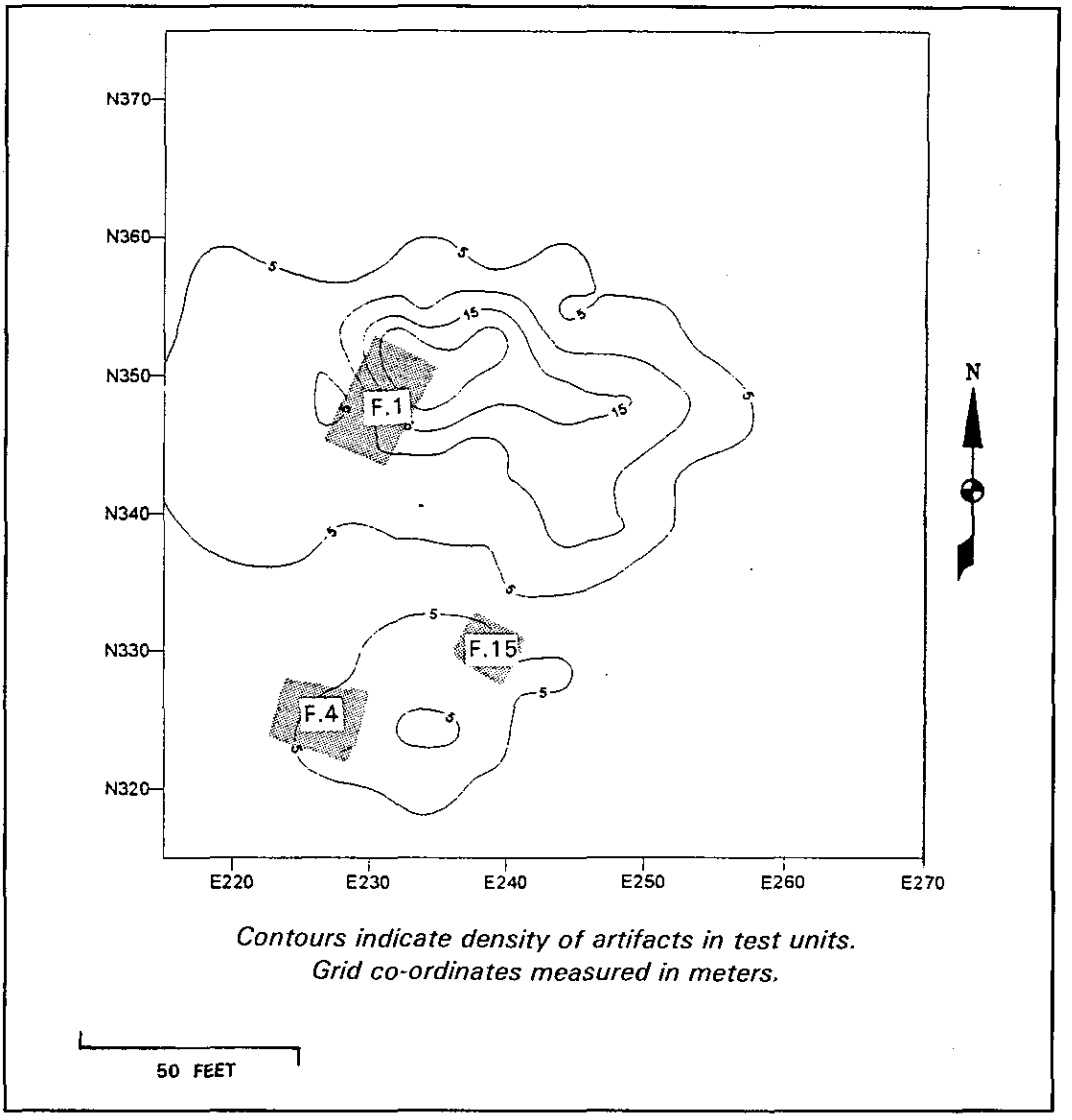

FIGURE 24: Distribution of Creamware in the Plowzone

Five coins were found at the McKean/Cochran Farm. Two were Spanish silver reals dating to 1691 and 1695, both from the plowzone. These rather valuable coins were probably lost rather than thrown away. Two English halfpennies from the reign of George I (1714-1727) were found in Feature 1, the later cellar, along with an American penny from 1810.

F. DISTRIBUTION ANALYSIS

The primary use of the plowzone deposit from the McKean/Cochran Farm was for *distributional analysis*, that is, analysis of where the artifacts came from. If different kinds of artifacts came from different parts of the site, that might tell us where different kinds of work was done. Of course, the place where an artifact was found is not necessarily the place where it was used

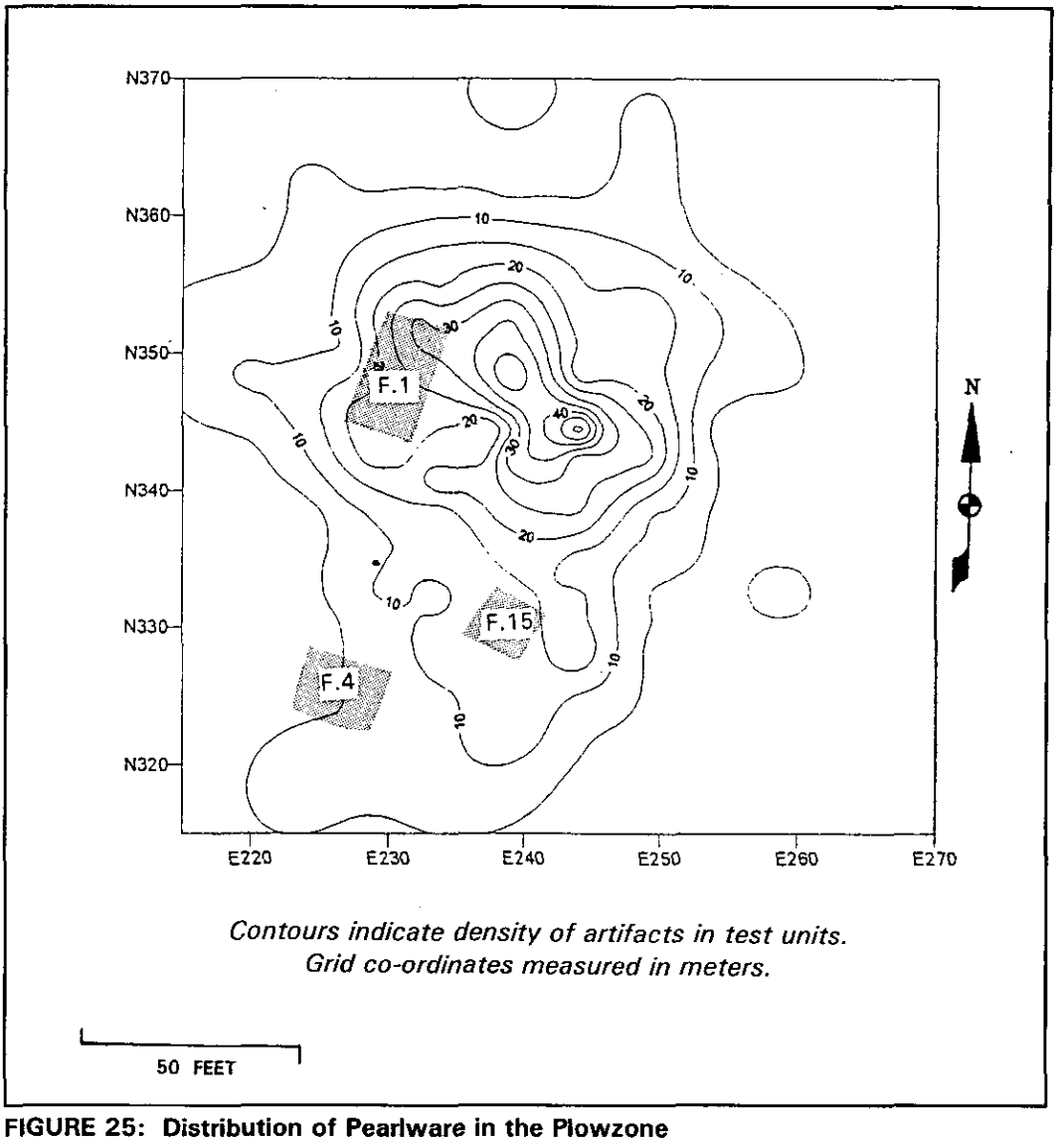

FIGURE 25: Distribution of Pearlware in the Plowzone

(Schiffer 1987). Trash may have been collected from some parts of the farm and dumped in other places. At the McKean/Cochran Farm, trash was certainly dumped into the old well and the two cellar holes. However, there is no reason to think that the residents would have sorted their trash before disposing of it, or that they would have shifted trash around the site in ways that would have disturbed the patterning—for example, by carrying trash from the front yard into the back yard and from the back yard into the front yard. Therefore, variations in the distribution of the different types of artifacts recovered from the plowzone of the site probably do represent the organization of the farm.

The overall distribution of the artifacts found in the plowzone is shown in Figure 23. Figure 23 was prepared using the Surfer mapping program, which employs a mathematical algorithm called Kriging

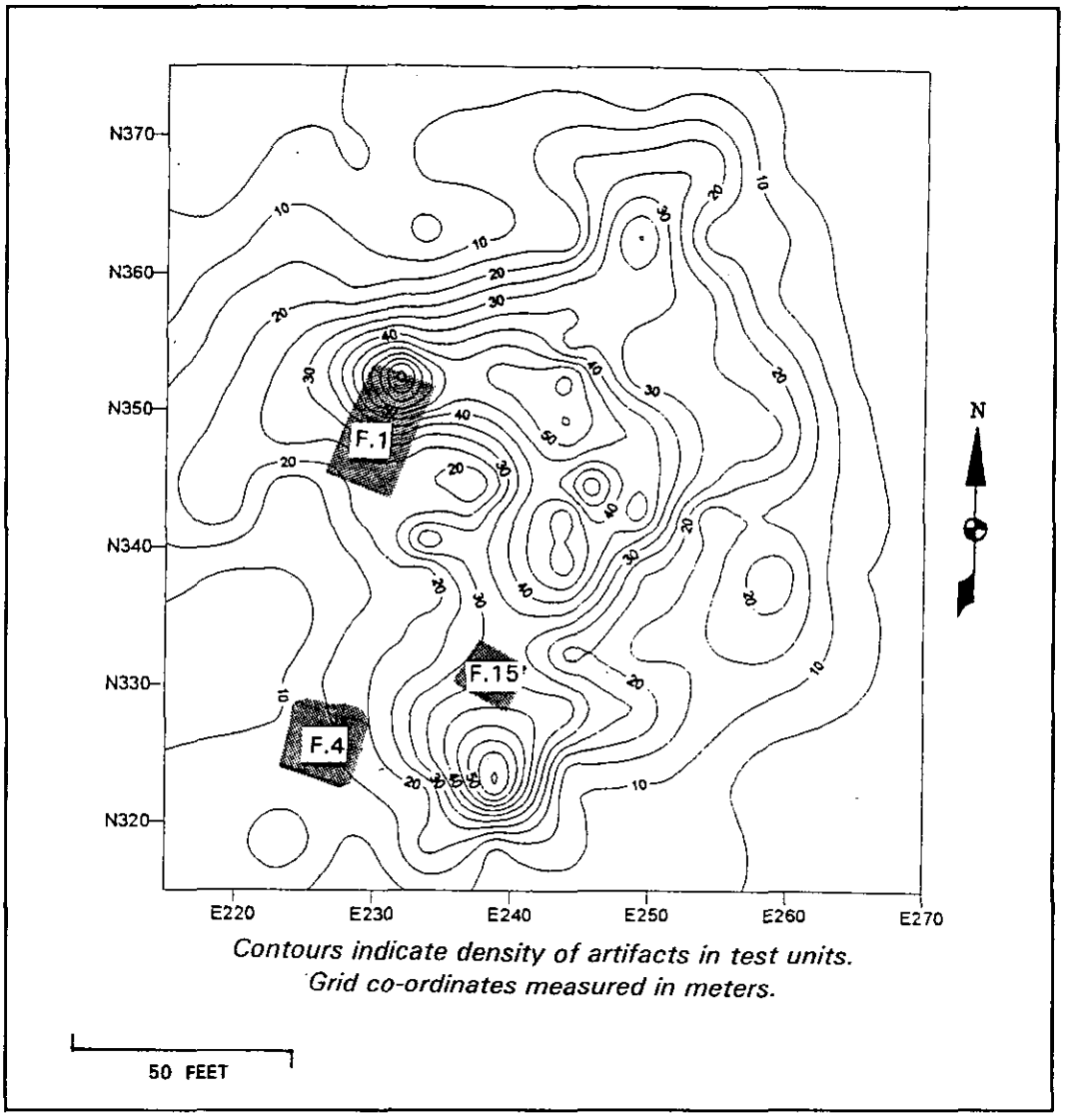

FIGURE 26: Distribution of Coarse Earthenware in the Plowzone

to turn a set of discrete points into a continuous surface. The counts on which the map is based do not include brick or bone. The numbers represent the number of artifacts per meter-square plowzone unit. This map shows that the highest artifact concentrations on the site were just north and east of the second house and in the vicinity of the dairy. In general, the artifact distribution indicated that many objects were used or thrown away near the houses, in the front yard of the second house, and in the work yards behind the two houses. The presence of high artifact counts in such work yards has been noted on other sites (Bedell and Luccketti 1988; Grettler et al. 1995) and is not surprising. Many objects would be broken or dropped in such a yard, and any pits might be filled in with trash to maintain a level work surface. To measure any changes in the distribution of artifacts over time, the distributions of creamware and pearlware were plotted (Figures 24 and 25). However, the maps are essentially the same. Both show high counts in the yard behind the second house, with a secondary concentration in the yard east of the first house. This distribution suggests that the second

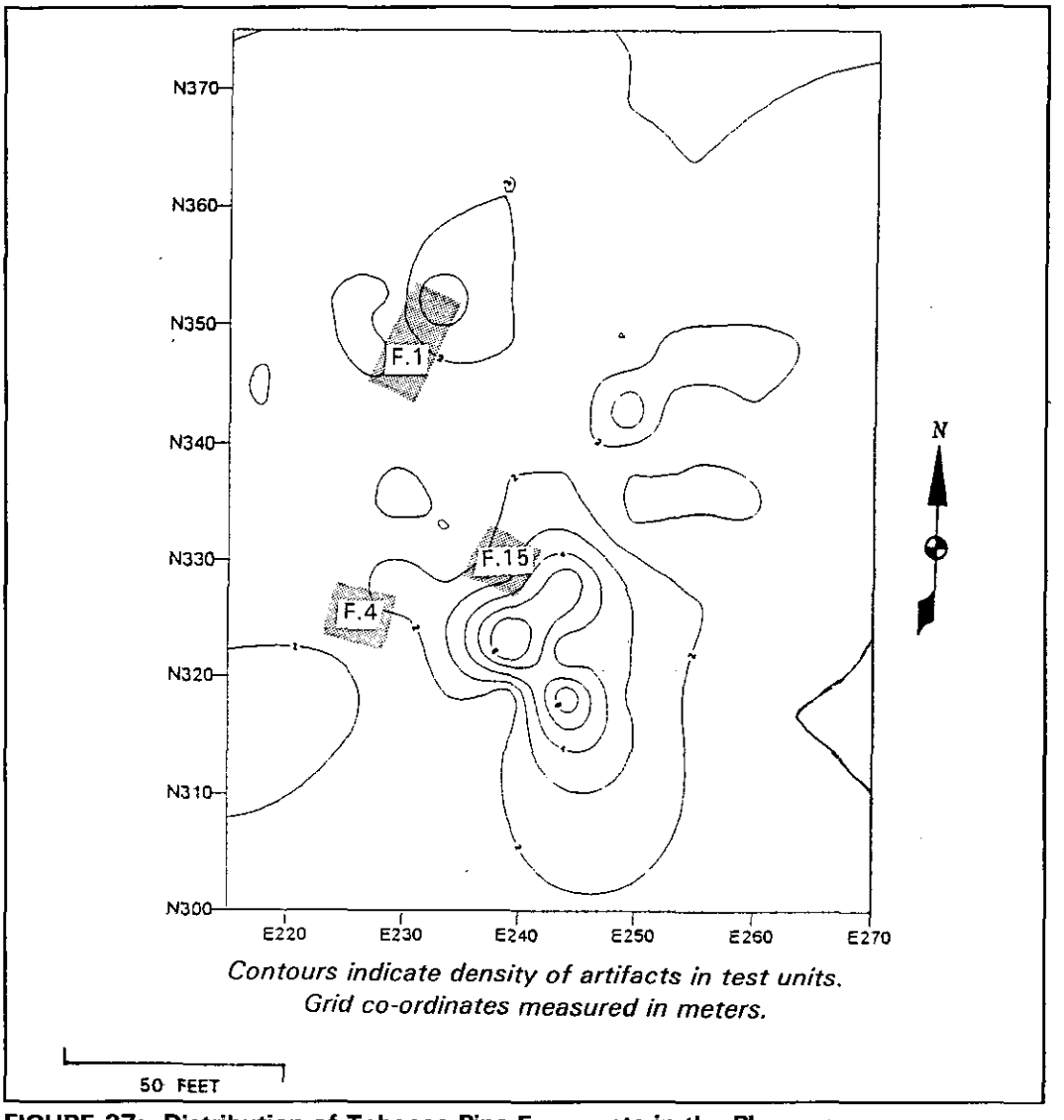

FIGURE 27: Distribution of Tobacco Pipe Fragments in the Plowzone

house was established fairly early in the site's history, early enough for its occupants to still have been using a substantial amount of creamware. Figures 26 and 27 depict the distribution of coarse earthenwares and tobacco pipe fragments, both of which show significant variations from the overall pattern. High coarse earthenware counts were recorded near the northwest corner of the later house, in the yard behind the later house, and south of the dairy. The concentration south of the dairy stands out from the other distributions. This concentration may represent milk pans and jars that were broken in the dairy and just thrown down the hill, or it may indicate that during the first phase of the site, when this area was the main work yard, most of the residents' ceramics were coarse earthenware. The distribution of tobacco pipe fragments is centered on the dairy. Because tobacco pipes were easily broken and left rather small pieces, the pipe fragments are more likely than other artifacts to have been left where the pipes were used. The distribution suggests that people spent a good deal of time in this area, and therefore that the area around the dairy was a focus of farm work.

G. PREHISTORIC ARTIFACTS

The McKean/Cochran Farm was located within a large prehistoric site called the Appoquinimink North Site (7NC-F-13). During the excavation and testing of the McKean/Cochran Farm, a number of prehistoric artifacts were also found, almost all of them in the plowzone. This site measured more than 200 yards north to south and stretched for more than 150 yards east to west along the riverbank. The site was bounded on the east by a ravine that extended more than 300 yards from the river. The lower reaches of the ravine held tidal marshes like those along the river, and the upper reaches contained an intermittent stream. The eastern boundary of the site was a bend in the river and a small ravine. The site included a broad, gently sloping area along the river, about 100 yards wide, a steeper slope, and a flat area about 150 yards from the river, where the McKean/Cochran Farm was located. During the Phase I and Phase II testing of the site, a thin scatter of prehistoric artifacts was found throughout this area. Two areas of somewhat higher prehistoric artifact density were identified within the site, one on the hilltop at the McKean/Cochran Farm, and the other on a low rise near the river. The stone artifacts from the site are summarized in Table 14. Most of the artifacts were waste flakes from the manufacture of stone tools; 14 projectile points (spearheads or knives) were also found (Plate 27).

One of the identifiable spearpoints was a type known as a St. Albans bifurcate (Broyles 1971) that is probably about 8,000 years old (see Plate 27, far left). This object was unusual for the area. All of the other datable artifacts found during two years of work on the SR 1 project in and around

PLATE 27: Prehistoric Artifacts from the Appoquinimink North Site

Odessa were 5,000 years old or less, so very few people lived near the McKean/Cochran Farm when this spearpoint was dropped (Bedell et al. 1997). (They probably lived further east, on land that has now been flooded by rising sea levels.) The other datable artifacts included small, contracting-stemmed spearpoints from the 3000 BC to AD 1000 period, a Jack's Reef pentagonal point (AD 600 to 900) (Ritchie 1971), three large, heavy "broadspear" points resembling the Snook Kill variety (see Plate 27, second from left) (Ritchie 1971), and a small triangular stone arrowhead (AD 1000 to 1600) (see Plate 27, far right). A few pieces of prehistoric ceramics were also found. Some of these were undatable grit-tempered varieties, but a few were shell-tempered specimens datable to the Late

Table 14. Summary of Prehistoric Stone Artifacts

	RAW MATERIAL										
ARTIFACT TYPE	Chert	Jasper	Rhyo-lite	Argillite	Quartz	Quart-zite	Chal-cedony	Silt-stone	Meta-sedim.	Ind.*	TOTAL
Bifaces											
Projectile Point	4	2	1	1	3	3	.	.	.	.	14
Early-Stage Biface	1	1	.	.	1	.	.	.	.	.	3
Middle-Stage	2	.	.	1	5	.	.	.	.	1	9
Late-Stage Biface	1	1	.	1	2	.	.	.	.	.	5
Indet. Biface	1	1	.	1	.	.	.	.	.	.	3
Unifaces											
Retouched Flake	1	1	.	.	.	.	.	.	.	.	2
Utilized Flake	1	1	.	.	.	.	.	.	.	.	2
Groundstone											
Grooved Axe	.	.	.	.	.	.	.	1	.	.	1
Cores											
Freehand Core	1	3	.	.	3	.	.	.	.	.	7
Bipolar Core	1	2	.	.	.	.	.	.	.	.	3
Tested Cobble	1	1	.	.	1	.	.	.	.	.	3
Debitage											
Flake Fragment	76	41	11	.	42	8	1	.	.	8	187
Flake Shatter	1	5	.	.	7	2	.	.	.	1	16
Block Shatter	19	39	1	.	62	3	1	.	.	2	127
Decortication	20	23	.	.	.	4	.	.	.	2	49
Early Reduction	59	51	11	.	24	8	3	.	1	12	169
Biface Reduction	20	12	7	.	.	4	1	.	.	2	46
TOTAL	221	184	31	4	150	32	6	1	1	28	646

*Ind. = Indeterminate; Metasedim. = Metasedimentary

Woodland period, AD 1000 to 1600. A stone axe was found in Feature 1, the historic cellar (see Plate 27, bottom). This object may have been incorporated into the cellar fill by chance, since several flakes and one other stone tool were found in the cellar fill. However, the axe seems rather large to have been washed into the cellar hole, and it may have been part of the house. Medieval English people called stone axes "thunder stones," and believed that such a stone, placed in the rafters, would help keep lightning away from a house. The later house at the McKean/Cochran Farm was built decades after Benjamin Franklin developed the lightning rod, but his conclusions were not accepted by everyone and this axe may represent a medieval belief that survived into the first decades of the scientific age. The axe itself could have been made any time between about 6000 BC and the end of prehistoric times.

The artifacts recovered from the McKean/Cochran Farm show that its advantageous setting, overlooking the Appoquinimink River at its confluence with a marshy stream, also drew prehistoric peoples to the spot, and they camped there occasionally for nearly 8,000 years.

VI. BONES AND SEEDS

A. BONES

1. The Archaeology of Animal Bone

We study the animal bones from archaeological sites for several reasons. First of all, we wish to find out what people of earlier times ate. Animal food was of course only part of the diet, and for some people it was a small part. Since ancient times, the mainstay of the European diet had been bread, and bread probably remained the staff of life for most Europeans in the New World. Unfortunately, bread and grain, and vegetable foods in general, only rarely survive in the ground for archaeologists to discover. Our knowledge of past diets is therefore limited in most cases to animal food, since in the right circumstances bones survive in the soil. (As described in the next section, an attempt was made at the McKean/Cochran Farm to find charred seeds or other plant remains, but these efforts were not very successful.) Bones can also tell us something about how people farmed: what animals they raised and how they managed their herds. For example, farmers who concentrated on dairying usually killed and ate most of their young male cattle, while saving the cows for milking; their bone heaps should therefore contain the bones of young bulls and very old cows, but very few middle-aged animals. The bones of wild animals tell us about hunting and fishing. The places where bones are found can also provide some information about how a farm was run, since the bones from the butchering of whole animals can usually be distinguished from table scraps. Butchering was very messy work, and knowing whether it was done right next to the house or in a special area a long way off can give us some idea of how people organized space on their farms and around their houses.

One example of the kind of information we can get from the study of animal bone from archaeological sites concerns the eating of beef. Beef, which is ubiquitous on eighteenth- and nineteenth-century archaeological sites, rarely appears in the documents used by historians to study diet. Probate inventories made for estate purposes, for example, often include large amounts of pork, and sometimes salt fish, but they almost never mention beef. Some historians have used these documents to argue that Americans ate little beef (Walsh 1992). However, since the bones show us that beef was regularly eaten, it seems clear that there is a problem with the documentary records. The fact is that the probate inventories include only preserved food in storage, and beef was almost always eaten fresh. Archaeology in this case provides a very important correction to information in the documentary record.

Bone was recovered from all contexts at the McKean/Cochran Farm, including the plowzone and the features. How well the bone was preserved depended on where it was found. Some of the bone fragments, especially the bone that was found in the plowzone and had therefore been repeatedly shifted around by plowing, were merely scraps of badly worn bone, not really identifiable. In some of the features, however, bone was preserved remarkably well, and even fish scales and tiny fish bones were completely intact. The bone from the two cellars and the early well (Features 1, 4, and

29) was particularly well preserved. Bone preservation depends not only on whether the bone has been physically disturbed and broken, but on the chemistry of the soil. Acidic soil eats away at bones and eventually dissolves them. In Delaware, as in most of eastern North America, the soil is naturally acidic, so bones buried by themselves are eaten away to nothing in a few hundred years. Fortunately for archaeologists, some of our ancestors' trash disposal habits had the unintended effect of making the soil less acidic and therefore preserving bone. Oysters were eaten by all people of the region, Indian or European, and oyster shell is weakly basic. Wood ash, which was, of course, produced in great quantities by households that heated and cooked with wood, is strongly basic. (Wood ash was used to produce the lye which, along with oil, was needed to make soap; lye is a very strong base.) A typical colonial trash deposit containing oyster shell and large amounts of wood ash, therefore, will be neutral or basic, preserving even the smallest bones for centuries.

The bones from the McKean/Cochran Farm were counted in two ways. Fragments were counted separately, producing a number called the Total Number of Fragments, often abbreviated TNF. However, the number of fragments does not actually tell us how much bone was present, since it also depends on how broken up the bone was; a deposit that had been thoroughly crushed would give a higher count than a well-preserved deposit. For the well-preserved deposits, therefore, the Minimum Number of Units, or MNU, has also been calculated. The Minimum Number of Units is a calculation of the least number of bones that could have produced the bone fragments in the collection (Grayson 1984; Lyman 1994). For example, three small fragments of rib bone from a cow could have come from a single rib, providing an MNU of one rib; however, if two of the fragments are both from the lower tip of the rib, then at least two ribs are represented, giving an MNU of two ribs. Archaeologists also sometimes calculate the Minimum Number of Individual animals (MNI) that could have produced the bones they have found, but this calculation has not been made for the McKean/Cochran Farm.

The bones from the collection have been placed in one of three categories: butchery waste, processing waste, and dietary refuse. *Dietary refuse* refers to the bones that were thrown away in the kitchen, during cooking, or from the table, after the meat on them had been eaten. In the language of contemporary recycling, dietary refuse is "post-consumer" bone. Dietary refuse therefore contains mainly bones from the edible parts of the animal. *Processing waste* is bone that was thrown away during the extraction of organ meat or bone marrow. A good example of processing waste is the bone refuse from making head cheese. Head cheese, a traditional European dish, was made by boiling the skulls of cattle (after the obvious meat, such as the brain, cheek muscles, and tongue, had been removed) to extract the remaining protein; the resulting liquid was then bound into a solid mass with gelatin extracted from calf's feet. The processed waste appears as butchered skull, mandibles (jaws), and foot bones from immature cattle, or veal. Another example is the processed waste from extracting cattle, or beef, tongue, which appears as butchered mandibles. *Butchery waste* is defined as the residual, or discarded, skeletal material from the processing of a carcass, and usually consists of the head and feet. (But not pigs' feet, which were usually eaten.) It is sometimes hard to distinguish between on-site butchery waste and processing waste based on this definition. However, butchery waste is generally identifiable by the large number of head and

foot elements, compared to dietary materials, from more than one individual of the same species, or head and foot elements from more than one species in the same deposit.

The slaughtering and processing of large domesticated mammals, such as sheep, pig, and cattle, was fairly standard. The carcasses of cattle, pig, and sheep were first cut up into large meat sections, or "butcher cuts." These were then cut into smaller units, or "meat cuts." Obviously, some parts of the animal offer better eating than others, and archaeologists have devised a system for rating the different parts of the carcass in terms of the quality and the quantity of the meat they provide (Huelsbeck 1991; Schmidt and Zeier 1993; Schultz and Gust 1983). Bones from archaeological sites are often well enough preserved to show marks of butchering and eating. Cutting by cleavers and axes leaves marks, called "cut marks," and the sawing of meat leaves particularly distinctive marks. The presence of these "butcher marks" helps determine which bone was eaten and which was not; for example, a groundhog bone found in a pit might simply be the remains of a recent inhabitant that had died nearby, in which case we would classify the bones as "intrusive," but if butcher marks are present on the bones, the animal was almost certainly hunted, butchered, and eaten. If bones are gnawed by dogs or rats, this also leaves identifiable marks, which can tell us something about how the bones were disposed of.

2. *Bones from the McKean/Cochran Farm*

We excavated 9,529 bone fragments at the McKean/Cochran Farm. Most of these were bones from domesticated animals such as cows and pigs, but some bone from wild animals was also found. A detailed, technical description of this material is presented in Appendix A, and only a summary is given here. Little bone was recovered from the plowzone, and because of its poor preservation, little could be learned from it. Most of the bone could only be identified as "large mammal" or "medium mammal," since it was too damaged for the species to be identified. Cattle, pig, and sheep were identified, as well as opossum, rabbit, and dog. Two pieces of stony coral were found, one in STP 30 and one in Unit PZ51. This material was probably used for making jewelry or other decorative objects.

The feature excavations contained a great variety of mammal, bird, reptile, and fish species. Bones were recovered from 17 features. Table 15 summarizes the species represented in each of the smaller features, the ones for which Minimum Number of Units calculations were not made. Most of this bone came from domesticated animals, especially cows and pigs, but the bones of fish, snapping turtles, rabbits, ducks, and geese were also found. Several bones had been gnawed by dogs, and others by rats.

The largest of these deposits were recovered from Feature 27, the later well, and Feature 55, a pit in Structure B. Feature 27 yielded 253 bone fragments. Most of the bone came from mammals, but a small number of bird, fish, and reptile bone fragments were also present. Identified mammal species included cattle, pig, rabbit, and sheep, although the largest categories were medium and large mammal. The bone deposit from this feature was composed of a mix of butchery/processing waste

Table 15. Summary of Species for Smaller Features, by Total Number of Fragments (TNF)

SPECIES	FEATURE 2	8	27	30	31	38	47	50	53	55	56	58	59
Mammal													
Cat	.	.	.	.	.	.	.	.	2	.	.	.	.
Cattle	2	3	29	28	.	8	.	.	2	1	.	.	15
Horse	.	.	.	.	.	.	.	.	.	.	.	.	4
Opossum	.	.	.	.	.	.	.	.	.	6	.	.	.
Pig	8	.	17	124	.	14	.	.	3	22	.	5	11
Rabbit	.	.	3	.	.	.	.	.	3	.	.	.	.
Rodent	.	.	.	.	.	1	.	.	2	.	.	.	.
Sheep	.	.	13	3	.	1	.	.	.	5	.	.	1
Small	.	.	4	1	.	1	.	.	5	1	.	.	.
Medium	.	5	110	22	5	17	.	2	19	28	.	3	11
Large	19	9	71	26	10	21	.	.	4	13	.	1	3
Subtotal	29	17	247	204	15	63	.	2	40	76	.	9	45
Bird													
Chicken	.	.	.	.	.	.	.	.	2	3	.	.	.
Duck	.	.	.	.	.	.	.	.	.	.	1	.	.
Goose	.	.	.	.	.	1	.	.	.	.	.	.	.
Small	.	.	2	.	.	.	.	.	.	.	.	.	.
Unidentified	.	.	1	1	1	.	.	.	.	4	.	1	.
Subtotal	.	.	3	1	1	1	.	.	2	7	1	1	.
Fish													
Catfish	.	.	.	.	.	.	.	.	2	.	.	.	.
Unidentified	.	.	2	.	.	.	.	.	.	21	.	.	.
Subtotal	.	.	2	.	.	.	.	.	2	21	.	.	.
Reptile													
Snapping Turtle	.	.	.	.	.	12	.	.	.	5	.	.	.
Unidentified Turtle	.	.	1	11	.	.	2	.	4	.	.	.	.
Subtotal	.	.	1	11	.	12	2	.	4	5	.	.	.
Bone													
Unidentified	.	.	.	.	.	.	.	.	.	1	.	.	.
Subtotal	.	.	.	.	.	.	.	.	.	1	.	.	.
TOTAL	29	17	253	216	16	76	2	2	48	110	1	10	45

and dietary refuse. Processing waste was evident from the presence of head and foot elements from sheep, pig, rabbit, and cattle, as well as from medium and large mammal. Dietary refuse was indicated by a variety of mutton, pork, beef, and veal meat cuts, as well as by butchered fragments of longbones and vertebrae from medium and large mammal. Mutton cuts came from the shank and butt-end of the leg, and pork cuts included a trotter (or foot). Beef cuts consisted of the chuck and shank, and veal of a cut from the leg. Throughout this deposit, several bone fragments had canine gnaw marks. A few bone fragments were charred and calcined (burned white), indicating either that they had been cooked or that the trash had been burned, and a fair number were stained. Bone

becomes stained when it is dumped with other organic material, such as rotting meat or decaying vegetation, so this bone was probably part of a mixed trash deposit. Bird, fish, and reptile remains were not identified by species. Bone from all three of these groups was present in low frequencies. Reptile was represented by a turtle carapace (shell) fragment.

Feature 55, an eighteenth-century pit located in Structure B, yielded a fair-sized bone deposit of 110 fragments. It was composed of mammal, bird, fish, and reptile species. Mammal included cattle, opossum, pig, and sheep. Bird species included chicken, and reptile species included snapping turtle. One of the most notable characteristics of the bone recovered from this feature was the almost complete lack of gnaw marks. The deposit represents a mix of butchery/processing waste, dietary refuse, and possible intrusive material. Butchery/processing waste is indicated by cranial (skull) and foot bones from sheep, pig, cattle, medium and large mammal, and fish. The sheep cranial bone came from a newborn. Dietary refuse was evident from mutton, pork, and beef meat cuts, as well as from chicken elements. Mutton consisted of a stew cut from the shoulder and hindshank, pork of a shank ham, and beef of a round roast. Components of the deposit that may be intrusive include bones of snapping turtle and opossum. None of the skeletal elements from either of these species exhibited butchering or gnaw marks.

Only a small sample of the oyster and clam shell from the site was kept; the rest was counted and thrown away in the field. Overall, more than 1,000 shells were found, most of them oysters. However, clam shells were found both in Feature 4 (before 1800) and in Feature 1 (circa 1830). The oyster shells exhibited a wide range of shapes and sizes, so they were harvested in both shallow, brackish water and deeper, salt water. The saltwater oysters would have to have been harvested some distance from the site, in the Delaware Bay, so they may have been purchased from commercial oystermen. A sample of the valves, which have growth rings like those on trees, was examined in the field with a hand lens, and the results suggested that most of the shellfish were gathered in winter or spring (Kent 1988).

3. *Analysis of Bones from the Major Features (1, 4, 15, and 29)*

Four features on the McKean/Cochran Farm yielded large, well-preserved deposits of artifacts, including bones. The bone from these features was subjected to more intensive analysis, including Minimum Number of Units calculations, which give us a better idea of how many bones were actually present.

The early cellar, Feature 4, was filled in before 1800. It yielded a fairly large faunal deposit, at least 306 bones (Table 16). The deposit was primarily dietary refuse, with small amounts of butchery and processing waste. Mammal, bird, fish, and reptile bones were found. Mammals included a variety of domesticated, exploited, and intrusive species. Domesticated species consisted of cattle, dog, horse, pig, rabbit, and sheep. Wild species included opossum, raccoon, and squirrel, and intrusive species included rat and other unidentified rodents.

Table 16. Summary of Species for Major Features, by Minimum Number of Units (MNU) and Percent

SPECIES	FEATURE 1, LATER CELLAR		FEATURE 4, EARLY CELLAR		FEATURE 15, DAIRY		FEATURE 29, EARLY WELL	
	MNU	%	MNU	%	MNU	%	MNU	%
Mammal								
Cat	27	2	.	.	.	.	6	1
Cattle	165	10	61	20	43	21	72	12
Cottontail	3	<1	.	.	.	.	.	.
Deer	1	<1	.	.	.	.	1	<1
Dog	4	<1	1	<1	1	<1	3	<1
Horse	.	.	9	3	9	5	.	.
Human	1	<1	.	.	.	.	.	.
Mink	2	<1	.	.	.	.	.	.
Muskrat	34	2	.	.	9	5	.	.
Opossum	4	<1	3	1	1	<1	1	<1
Pig	417	24	71	23	35	17	64	10
Rabbit	22	2	3	1	4	2	9	2
Raccoon	.	.	1	<1	2	1	2	<1
Rat	83	5	5	2	13	6	11	2
Rodent	22	2	2	<1	2	1	16	3
Sheep	83	5	52	17	12	6	34	6
Squirrel, Fox	7	<1	1	<1	.	.	.	.
Squirrel, Gray	11	1	.	.	1	<1	.	.
Woodchuck	2	<1	.	.	.	.	.	.
Small	72	4	6	2	5	2	15	3
Medium	118	7	17	5	10	5	36	6
Large	15	1	5	2	6	3	5	<1
Subtotal	1,093	64	237	77	153	74	275	44
Bird								
Blue Jay	8	<1	.	.	.	.	.	.
Chicken	110	6	11	4	19	9	53	9
Duck	22	2	5	2	.	.	.	.
Goose	48	3	2	<1	2	1	15	3
Pigeon	18	1	4	1	1	<1	11	2
Red-bellied Woodpecker	2	<1	.	.	.	.	.	.
Turkey	8	<1	.	.	.	.	3	<1
Unidentified	111	6	10	3	9	4	25	3
Subtotal	327	19	32	10	31	15	107	17
Fish								
Catfish	58	3	6	2	11	5	11	2
Cod	.	.	.	.	.	.	1	<1
Drum	1	<1	.	.	.	.	.	.
Salmonid	.	.	1	<1	.	.	.	.
Shad	53	3	7	2	.	.	2	<1
Striped Bass	15	1	.	.	.	.	.	.
Unidentified	127	7	19	6	2	1	218	35
Subtotal	254	15	33	11	13	6	232	38

Table 16 (continued)

SPECIES		FEATURE 1, LATER CELLAR		FEATURE 4, EARLY CELLAR		FEATURE 15, DAIRY		FEATURE 29, EARLY WELL	
		MNU	%	MNU	%	MNU	%	MNU	%
Reptile									
Blanding's Turtle		.	.	1	<1	4	2	.	.
Box Turtle		3	<1	.	.	3	2	.	.
Pond Slider		.	.	.	.	2	1	.	.
Snapping Turtle		12	1	.	.	.	.	1	<1
Soft-shell Turtle		1	<1	.	.	.	.	.	.
Unidentified Turtle		10	<1	2	1	.	.	4	<1
	Subtotal	26	1	3	1	9	5	5	<1
Bone									
Unidentified		2	<1	1	<1	.	.	.	.
	Subtotal	2	<1	1	<1	.	.	.	.
	TOTAL	1,704	100%	306	100%	206	100%	619	100%

The most frequent mammal species in the early cellar were cattle, pig, and sheep, and pig was the most common. There were 71 pig bones, representing dietary refuse and processing waste. Processing waste consisted of four butchered skulls. Dietary refuse was indicated by a wide variety of cuts, most of which represented high-quality hams or roasts from the shoulder and ham, as well as a few chops from the loin. Stew meats were also present, including trotters and ham hocks. There were 59 bones from adult cattle and two veal bones. Cattle was represented by dietary refuse, processing waste, and butchery waste. Dietary refuse included bones from both low-cost meat, such as roasts and stew meats from the chuck and round, and prime cuts such as steaks from the prime rib. Veal was represented by a leg roast and stew meat from the shank. Processing waste consisted of butchered mandibles and metapodials (feet). Butchery waste was also present, although in small amounts, and consisted of toe bones. There were 52 sheep bones, representing dietary and processing waste. Processing waste consisted of two skulls and mandibles. One of the mandibles bore butcher marks. There were roasts and stew meats from the shoulder and leg as well as a few chops from the bracelet and loin. Shank cuts predominated, followed by roasts from the butt-end of the leg.

Some of the other mammal bones in the early cellar had also been butchered, including opossum, rabbit, and horse. Horse skeletal elements with butcher marks included the head and feet. The butchering of horses for food was rare in colonial America, and these bones are therefore highly unusual. Dog, rat, squirrel, and raccoon did not exhibit butcher marks, which indicates that these animals were not necessarily eaten.

The bird species identified in the early cellar included chicken, duck, goose, and carrier pigeon (see Table 16). Chicken was the most frequent species. All of the bird species were represented by edible body parts. With the exception of a duck bill and three chicken foot bones, no evidence of bird processing was noted. Identified fish species included catfish and shad. A salmonid species

was also present, probably a trout. All of the fish remains represent processing waste. They were composed of skull, scales, and fins. Turtle species consisted of Blanding's turtle. This edible species was represented by carapace fragments.

Feature 29, a well, also dates to the site's early period. It yielded a large and diversified faunal deposit of 619 bones. The deposit was composed of a mix of dietary refuse, processing waste, and butchery waste, and included mammal, bird, fish, and reptile bones. Mammal species were the most frequent. The domesticated mammal species present were cat, cattle, dog, pig, rabbit, and sheep (see Table 16). Species that may have been eaten included opossum, raccoon, and deer. Since rats were not eaten, the rat bones are presumably from animals which burrowed into the trash and died there; these bones are classified as intrusive.

The most common mammal species in the well were pig, cattle, and sheep. Pig consisted of 64 bones. It was composed of dietary refuse and processing waste. Dietary refuse consisted of several roasts from the shoulder and ham, as well as stew meats such as hocks and trotters. Processing waste was evident from six paired mandibles and possibly associated skulls that exhibited butcher marks. Seventy-two cattle bones were found, a mix of beef and veal dietary refuse and processing waste. Beef included large cuts of meat from the chuck, prime rib, plate, loin, and round. Processing waste consisted of butchered skull and mandibles. Veal included two leg roasts and a butchered skull. There were 34 sheep bones, almost all dietary waste. Meat cuts were predominantly roasts and stew meats from the shoulder and leg. There were also a few chops from the bracelet and loin. Processing waste was indicated by a single mandible.

The well yielded a small range of bird species, including chicken, goose, pigeon, and turkey (see Table 16). Chicken was the most frequent species. Each of these species was represented primarily by edible body parts. A few foot bones suggest the presence of processing waste resulting from the cleaning of bird carcasses. Identified fish species were limited to catfish, cod, and shad, each represented by skull elements. Since cod is an ocean species that was generally caught and preserved by commercial fishers, these fish were probably purchased as salt fish. The catfish and shad could have been caught in the Appoquinimink. Most of the unidentified fish consisted of skull, fin, and scale elements. Unlike the early cellar, this deposit also contained a small number of fish vertebrae. Reptile species included snapping turtle. Both snapping turtle and unidentified turtle were represented for the most part by carapace fragments.

The later cellar, Feature 1, contained the largest deposit recovered from the site. It yielded 1,704 bones, composed of a mix of dietary refuse, processing waste, and butchery waste. A wide range of mammal, bird, fish, and reptile species was represented (see Table 16). The mammals included domesticated, exploited (wild animals that were hunted or trapped), and intrusive species. Domesticated species consisted of cat, cattle, dog, pig, rabbit, and sheep. As the cat and dog bones showed no butcher marks, it is unlikely that the meat from these animals was eaten. On the other hand, since these bones were tossed out with the rest of the trash, it seems clear that the farmers on the site were not particularly sentimental about their pets. Wild species included cottontail, mink or otter, muskrat, opossum, raccoon, squirrel, and woodchuck. Only mink bore any obvious butcher

marks, probably from the skinning of the animals. The bones of these small mammals represented in the feature consisted of cranial and postcranial skeletal elements. The large variety of species and their associated skeletal elements argues that these small mammals were hunted, and were not just included accidentally. Intrusive species were present, however, in the form of rat.

In the later cellar, large domesticated mammal species predominated. Pig was the most frequent species. There were 417 pig bones, including dietary refuse and processing waste. Pork cuts included several roasts and hams from the shoulder and ham, as well as stew meats from the hocks and trotters. Processing waste was indicated by several skulls and paired mandibles exhibiting butcher marks. Pig made up a larger percentage of the bones in the later cellar than in the earlier features, indicating increased reliance on pork in the later period of the site. There were 165 cattle bones, consisting of dietary refuse, processing waste, and butchery waste. Beef meat cuts included roasts and stew meats from the chuck and round. Veal meat cuts also included roasts and stew meats from the shoulder and leg. Processing waste was indicated by butchered skull bone. Butchery waste was evident in the form of foot bones. Sheep consisted of 83 bones. Most of the mutton was stew meat cuts from the shanks; there were also a few chops from the bracelet and loin and roasts from the leg and shoulder. A number of mandibles and skulls that did not have butcher marks from brain or tongue extraction suggest butchery waste.

The later cellar contained a wide range of bird species, including species raised or hunted for food and species that were almost certainly not eaten (see Table 16). Food-related species consisted of chicken, duck, goose, pigeon, and turkey. Non-food species included blue jay and red-bellied woodpecker, both of which were represented by only a single bird. All of the edible species were represented by both edible body parts and processing waste from the removal of heads and feet. Blue jay consisted of a full range of skeletal elements, whereas the red-bellied woodpecker consisted of a foot element. There was a limited range of fish species represented, including catfish, drum, shad, and striped bass. Catfish and shad were more frequent than the other species. Reptile species consisted of box turtle, snapping turtle, and soft-shell turtle. Although box turtle is not considered an edible species, snapping turtle and soft-shell turtle are edible. All of these species were represented by longbone and shell fragments. A few of the turtle longbones exhibited cut marks.

The dairy, Feature 15, yielded a fair-sized faunal deposit, consisting of 206 bones (see Table 16). It was composed primarily of dietary refuse and processing waste, and a small amount of butchery waste. The deposit contained mammal, bird, fish, and reptile species. Mammal species included domesticated, exploited, and intrusive species. Domesticated species consisted of cattle, dog, horse, pig, rabbit, and sheep. Dog was the only species not eaten. Exploited mammal species included opossum, muskrat, and squirrel, and the intrusive species was rat.

In the dairy, large domesticated mammal species predominated. There were 35 pig bones, all dietary refuse and processing waste. The pig bone consisted of several cuts from the ham and a few cuts from the shoulder, loin, and feet. Processing waste was indicated by skull bone. Forty-three cattle bones were found, including dietary refuse and butchery waste. There was a high frequency of beef meat cuts from the chuck, along with lower frequencies from the prime rib, loin, and round. In

addition, there were two veal cuts from the shoulder. Butchery waste was indicated by loose teeth and four foot bones. Only 12 sheep bones were found, including a single skull with horn stubs attached. In addition to pig, cattle, and sheep, horse was also present in the deposit. It was composed of two mandibles and teeth. The mandibles exhibited chop and slice marks that indicated the removal of the tongue for eating. None of the small mammals showed signs of having been butchered, but this does not mean they were not eaten, or exploited for fur.

Bird species from the dairy were limited to chicken, goose, and pigeon. Chicken, which was the only species that was well represented (see Table 16), consisted of skull, feet, and edible body parts. Several fish skull bones, all from catfish, were found. Reptile was represented by three species of turtle, including Blanding's turtle, box turtle, and pond slider. Except for the box turtle, these are edible species. Almost all of the turtle bone consisted of turtle carapace fragments, none of which exhibited butcher marks.

4. Summary

The bones from the McKean/Cochran Farm were for the most part what one would expect to find at a farm of the 1750 to 1830 period. Most of the meat eaten came from pigs and cattle, which were raised on the farm. Sheep were also raised and eaten, but not in large numbers. Most of the pigs were killed when they were one year to 18 months old. Some historians have argued, based on written records, that it was the common practice to kill most of the year's pigs at a single slaughtering in November, when they were about 10 months old (Fletcher 1950; Lemon 1967), but archaeology has not confirmed this model. Most of the cattle were adults. The killing of adult cattle suggests that they were being raised primarily for meat, or as draft animals, and that the residents did not have a commercial dairying operation. On a dairy farm, most of the males are killed when they are young. However, other evidence from the site, especially the large number of milk pans found, suggests that the residents were dairying on a large scale. Perhaps they sold their young bulls instead of killing them. Chickens were certainly raised, and probably geese as well. The bones from the earlier and later deposits on the site were very similar, so the pattern of stock raising and meat eating seems to have changed very little over the site's history.

The bones from pigs, sheep, and cattle show that the residents of the farm ate all the parts of these animals, including both the prized cuts (hams, roasts, tongues) and the less valuable parts, such as heads and feet. Some archaeologists have found large differences between the meat cuts eaten by rich and poor people in towns and on southern plantations (Garrow 1987; Huelsbeck 1991; Otto 1984). Planters and rich urbanites seem to have eaten only the best parts of the cow or pig, leaving the rest for the slaves and poor townspeople. However, these differences have not been observed on eighteenth- and nineteenth-century farms in the Middle Atlantic region or the Northeast (Bedell et al. 1994; Catts et al. 1995; Coleman et al. 1984; cf. the historical research of Fletcher 1950:403). Farmers who lived in these areas, whether rich or poor, seem to have eaten all parts of the animals they raised and slaughtered. Rich farmers may have eaten more meat, and their animals may have been better fed and fatter, but they still ate pig's feet and head cheese. Their diet was determined by their traditional culture, which enjoined them to waste nothing and provided recipes for using all

the parts of the animal. If we exclude the extremes of aristocracy and deprivation, status differences between rich and poor seem to have had little impact on the kinds of meat eaten in the region.

A wide range of wild animal bones was also found. Wild animals did not provide a large percentage of the residents' diet, but the 20 or so wild species represented did provide some variety. Butcher marks were present on several species, including opossum, rabbit, and turtle, so these animals were definitely eaten. Other animals, such as the mink and raccoon, may have been trapped for their fur. Pigeons were certainly hunted regularly, since pigeon bones were found in all four major features. Duck bone and the remains of one turkey were also found.

What is most striking about the wild animal bone is that almost all of it is from small animals; only one deer bone was found on the entire site. Most of the fish found was catfish and shad, which could be taken by hook and line in the Appoquinimink River or other nearby streams. The presence of a variety of small animals suggests that the hunting and fishing on the site may have been done by boys. Small game hunting was, and still is, a boyhood ritual in much of America, and both Letitia McKean and John Cochran had sons of the appropriate ages. This suggestion is reinforced by the presence of box turtles in two features and the blue jay and woodpecker bones in Feature 1. None of these animals were eaten by Europeans. (Box turtles, which consume a wide variety of poisonous mushrooms and berries, are actually dangerous to eat). However, all of them provide trophies and decorations that are desired by boys, so boys hunt them today and probably did in 1800. These bones therefore lead us to imagine young Birmingham McKean Clark or Robert Cochran decked out in bird feathers like the Indians of a boy's fantasies, on his way out to hunt rabbits in the woods or fish for catfish in the lazy Appoquinimink.

One difference between the earlier and later deposits on the site is that muskrat bones were found only in the later deposits. Muskrats are regularly eaten in Delaware and on the Maryland Eastern Shore, but they are generally regarded as a somewhat disgusting food by people from outside this area. Their absence from earlier deposits may therefore indicate a gradual adaptation to local conditions. Prior to 1800, the residents, new to the area, may have found the thought of eating muskrat disturbing. The Cochrans, however, who had been living close by in Maryland for some years, had either already taken up this local custom or soon acquired it.

The bones also tell us something about how the residents ate their meat. Pigs, cattle, and sheep were butchered into large meat cuts by chopping and cleaving. Only a few possible saw marks were found on the bones from the site, and these may actually have been made with cleavers. This point is important, because the way we eat meat has changed greatly in the past 200 years. The traditional European practice was to cook meat in large pieces, such as roasts or hams, that could feed large groups of people. In the nineteenth century it became common to saw meat into smaller portions, such as steaks or chops, that could be eaten by a single person. Traditionally, the odd parts of the cow were cooked in stew, whereas now they are more likely to be ground up, pressed into patties, and served as individual hamburgers. This change in eating habits seems to some people to indicate a decline in the communal way of doing things and a rise in individualism (Deetz 1977). The residents of the McKean/Cochran Farm ate their meat in the traditional way.

Although some butchery waste was found for all the major species, chicken was the only animal for which the amount of butchery waste matched the amount of dietary waste. Chickens were clearly killed and butchered right outside the kitchen. Cows and pigs, however, must have been butchered in a separate area, because little of the butchery waste for these animals became mixed with the dietary refuse from the kitchen. The residents evidently made an effort to separate the messy butchering process from their living space. On the other hand, many of the bones had been chewed by dogs, and a few by rats, which suggests that there may have been a certain amount of mess around the house.

B. PLANT REMAINS

To search for preserved plant remains, samples of soil were taken from Features 1 and 29. These two features contained large deposits that looked rich and organic, with visible charcoal and tiny, well-preserved bones. The soil, totaling 35 liters, was processed using a technique called flotation. In flotation, the soil is dumped into water in a device that gently agitates the water. The heavy material sinks to the bottom and is caught in a screen. Material light enough to float, including plant specimens, rises to the top of the water and is skimmed off with very fine cloth mesh. The light material was inspected using low-power binocular magnification (10X). A sample of wood charcoal, and all of the nutshell and other floral remains greater than 2 millimeters in size, were recovered from the samples. The very small (< 2 millimeters) material was then inspected for seeds, and any found were recovered.

Unfortunately, despite the apparently ideal condition of the soil strata from which the samples were taken, very little plant material was recovered from the site. A single, carbonized fragment of black walnut shell was recovered from Feature 29, the earlier well. Two burned corn kernels and a single, carbonized grain of wheat were recovered in the samples from Feature 1, the later cellar. A single burned peach pit and a burned fragment of what appeared to be a corn kernel were recovered from the early well, Feature 29, and a second burned peach pit was recovered during the excavation of Feature 38, a small pit. Weed seeds were ubiquitous, but none of them were burned, and they may all have been recent (Minnis 1981). Five unburned blackberry and elderberry seeds were also found, but they looked particularly fresh and were probably recent. The wood charcoal sample included oaks (50%) (red and white groups), hickory (15%), ash (8%), poplar (8%), walnut (5%), and maple (3%), as well as unidentifiable specimens. The charcoal probably gives us an idea of the trees that grew around the site.

The discovery of corn and wheat at the site is hardly surprising, since almost all farmers in the region grew these crops. The peach pits are interesting, since they probably mean that the residents had an orchard, something that was common but by no means universal at the time. Commercial peach growing was not introduced into Delaware until the 1830s, so these peaches were grown either for the residents' own use or to sell at the local market (De Cunzo and Garcia 1992). The black walnut suggests the gathering of wild nuts. Other fruits and vegetables undoubtedly eaten by the residents of the site, however, remain archaeologically invisible.

VII. INTERPRETATIONS

A. THE HISTORY OF THE FARM

The excavation of the Appoquinimink North Site uncovered the remains of the McKean/Cochran Farm, which was occupied between 1750 and 1830. The first occupants of the farm were probably tenants of Veronica Birmingham, an heiress who seems to have lived at her husband's home in Middletown. It is possible, however, that she lived at the farm herself for at least a few years. The property then descended to her grandchildren Thomas and Letitia McKean, and it was certainly leased while they were children. A tax record from 1797 indicates that the farm was still leased to tenants at that time, but by 1810 Letitia McKean Clark, a widow, was residing at the farm with her two children and a single slave. After her death in 1814, the farm was sold to Robert Cochran. Both the McKeans and the Cochrans were well-to-do families with Scots-Irish roots.

During the excavation of the site, more than 38,000 artifacts were recovered, and the remains of farm buildings from two periods were discovered and excavated. These finds allow us to reconstruct the history of the farm and relate that history to broader changes taking place in the culture and economy of Delaware, the Middle Atlantic region, and the British-American world in general.

The reconstruction of the physical layout of a farm depends on many techniques. Several of the buildings on the McKean/Cochran Farm left foundations in the ground for the excavators to find and measure, but other buildings left no easily recognizable traces. For example, neither the smokehouse listed in the 1797 tax return nor the log stable referred to in the 1816 tax return was found. Eighteenth- and nineteenth-century builders constructed many different kinds of foundations. Some buildings were erected on deep-set, easily recognizable stone or brick foundations, but this was by no means the most common technique. Some buildings were framed around posts set in the ground, like modern pole barns. The holes that were dug to hold these posts usually survive, so these "earthfast" buildings are also easy for archaeologists to recognize. Other construction techniques left little for archaeologists to find. Log buildings, in particular, were often set on very thin brick foundations, no more than a course or two deep, that have usually been destroyed by the plow. The Cochrans' log stable was probably built this way, which explains why no foundations were found. Another common technique was the use of brick piers, small foundations 2 to 4 feet square placed beneath the corners and other vital points of the structure. Such foundations, which can still be seen on older farms all over the Middle Atlantic region and the South, left the building largely open underneath, providing a crawl space sometimes used for the storage of tools and other items. These piers were usually only dug one or two courses into the ground, and sometimes they were built right on the surface, so they have also usually been destroyed by the plow. The McKean/Cochran Farm is actually unusual for an eighteenth-century farm, not in the number of buildings that have been obliterated, but in the number that have left clear traces for the archaeologist. At the William Strickland Plantation in Kent County, which dated to the middle of the eighteenth century, the only structure to leave clear foundations was a small smokehouse (Catts et al. 1995). The main house and

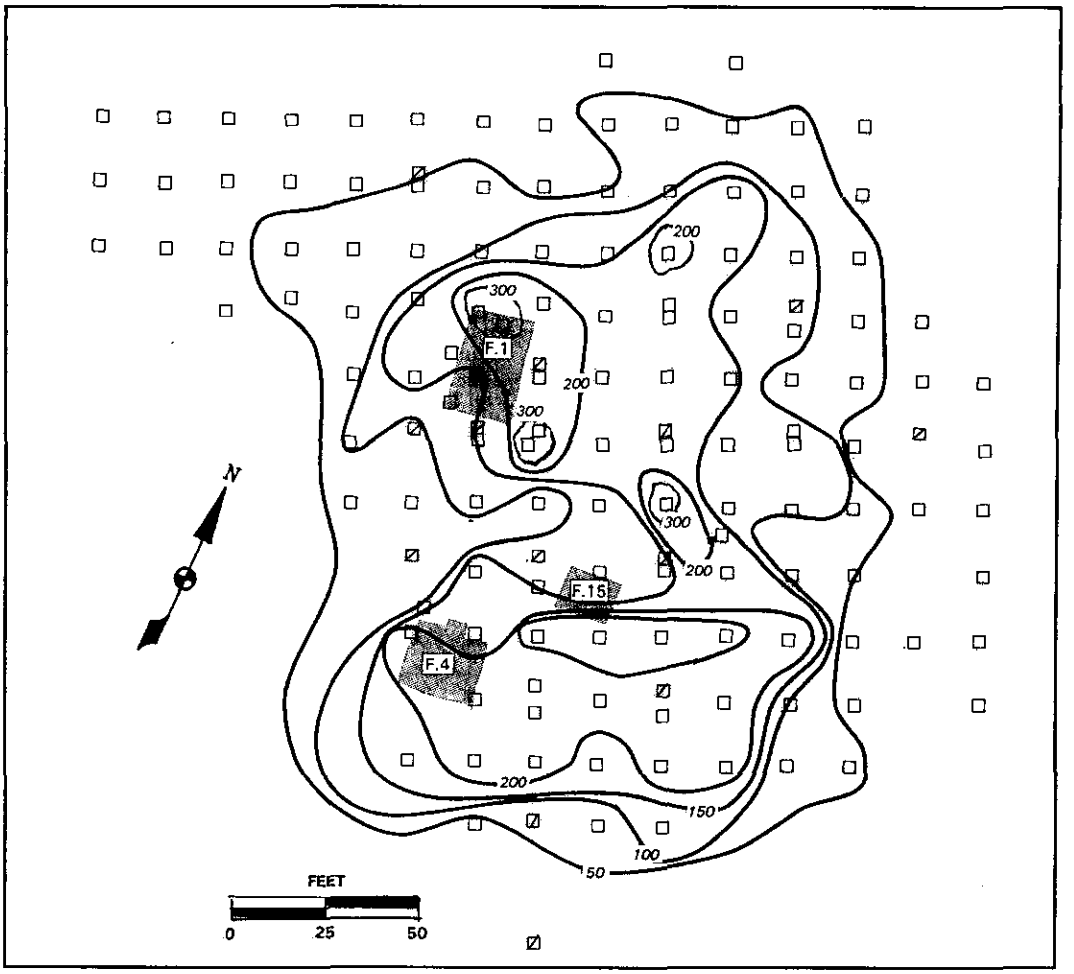

FIGURE 28: Distribution of Brick Fragments in the Plowzone

all the other outbuildings had to be reconstructed from partial cellars and partially preserved posthole patterns (Catts et al. 1995).

Two techniques allow us to at least guess at the locations of structures erected on flimsy foundations that have not survived. One is mapping the distribution of architectural remains, especially brick bits, in the plowzone, and the other is the mapping of fence lines. If a brick pier or shallow brick foundation was plowed up and destroyed, many pieces of brick would become incorporated into the plowzone nearby, and the location of the structure should be identifiable from the counts of brick bits in the plowzone test units. The correlation is not simple, because many factors can influence the brick distribution. If the bricks were made on the site, as they often were in the eighteenth century, the sites of the brick kilns would yield very high totals. Bricks could also be stockpiled, and a large brick pile that was forgotten and had decayed might be misinterpreted as a foundation. On the other hand, if the bricks from a structure were reused, there might not be enough brick pieces left for the structure to be detected. Still, this technique has some merit, especially when archaeologists have little else to go on. Figure 28 shows the distribution of brick bits from the plowzone of the McKean/Cochran Farm. (Brick from Phase II test units was not counted, so they are not included

in the diagram.) Some of the peaks in the distribution are easily explainable in terms of the known buildings. For example, 357 fragments were recovered from a unit at the north end of Feature 1, near the chimney of the later house. However, other brick concentrations are not obviously related to the surviving foundations. One peak is visible 30 feet northeast of the later house, and another is visible 40 feet to the southeast. The highest totals on the site were actually recorded from units just south and east of the dairy, Feature 15, a structure that incorporated very little brick. We have interpreted these concentrations as evidence of structures that are now missing, as explained below.

The technique of identifying buildings by mapping fence lines is even easier to understand: people rarely build fences through standing buildings. Fence posts were generally set deep enough into the ground to survive plowing, so fences can often be followed archaeologically. A fence that ends mysteriously may have run up against a now obliterated building, or, more realistically, its builders may have started work next to the building. If the fence begins again 30 feet away, the building was probably 30 feet wide. Many fences were identified at the McKean/Cochran Farm, but only one could be followed for an extended stretch in a regular way (Fence A), and that fence was probably not built until after the farm had been abandoned. The others resembled pieces of fences. The gaps in these fences may represent standing buildings, and some of them have been interpreted in this way.

1. The Early Farm

The archaeological evidence shows that the McKean/Cochran Farm was first occupied some time around 1750. The earliest deposits included white salt-glazed stoneware, which was introduced around 1720 and was very common in the 1740s and 1750s, but very little creamware, introduced in 1762. At that time the property belonged to Veronica Birmingham, who probably lived with her husband at Middletown, and the farm was most likely leased to tenants. A tax record from 1797 provides a thumbnail sketch of the farm, which included a house, barn, crib, kitchen, and smokehouse. The investigators at first thought it odd that a tenant farm would have such a rich assortment of outbuildings, since there would be little incentive for tenants to invest in improvements on property they did not own. However, a perusal of the detailed 1797 tax records for Newcastle County reveals several other well-appointed tenant farms, so the McKean/Cochran was not particularly unusual.

The first house on the site was small. Its cellar, Feature 4, measured about 18 by 15 feet. Partial cellars were common in the eighteenth century, but it seems unlikely that the McKean house was ever larger than its cellar. The house was located on a moderately steep slope leading down to the river south of the site, so it probably did not extend any further in the north-south direction. A well was located only 7 feet to the east. As the area west of the house had been destroyed by erosion, it is possible that the house once extended further to the west, but there is no evidence of this. In Figure 29, a reconstruction of what the farm may have looked like in its early stage, the house is shown as measuring 18 by 15 feet. A house of this size probably had only one room on the main floor. Such one-room houses were the most common type in the Chesapeake area in the eighteenth century, and probably in Delaware as well (Carson 1974; Herman 1987:15).

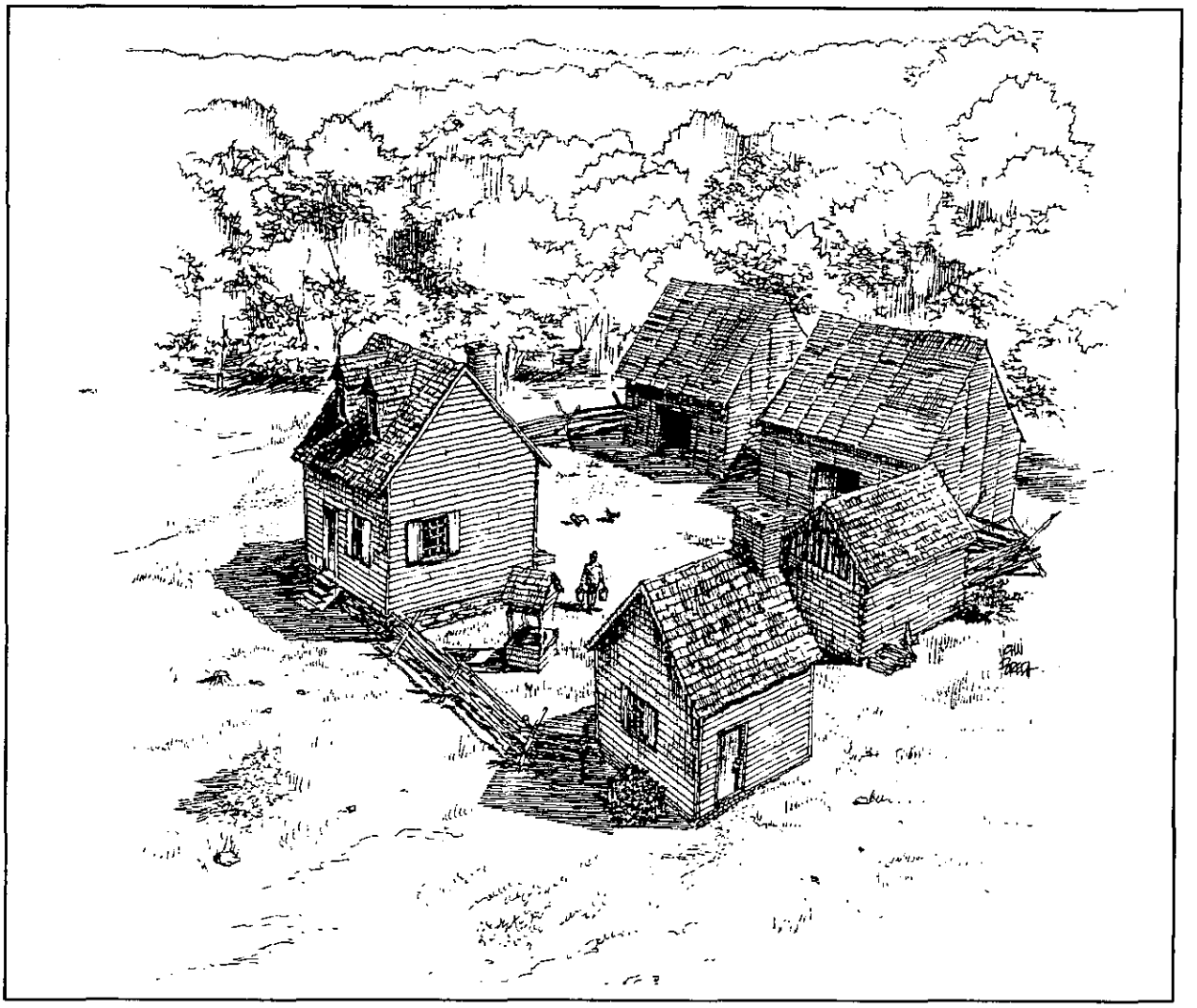

FIGURE 29: Reconstruction of Farm, circa 1797, Showing House (Feature 4), Well (Feature 29), Barns (Structures A and B), Kitchen Listed in 1797 Tax Return, and Shed (Conjectural)

The typical dimensions of such a house were 16 to 20 feet square, roughly the size of the McKean house. A single chimney, revealed in the plowzone brick distribution, provided warmth. The reconstruction shows the house with dormer windows on a garret floor. Houses with only a crude loft were also common, but since the McKean house was built with a full cellar, we have assumed that it was fully extended in the vertical dimension. The upstairs may have also been a single room, but it was probably divided into three smaller chambers like that of the Dilworth House, a single-room house built near Port Penn in 1714 (Herman 1987:17). The cellar was entered from outside, through a bulkhead, and there were probably no interior stairs to the cellar.

The only other structures from the early period for which direct evidence survived were the two earthfast barns, Structures A and B. The appearance of these structures is based on the reconstructed tobacco barns at St. Mary's City, Maryland. Earthfast construction, the use of wooden posts set directly in the ground as foundations for a barn or house, was very common in medieval

England. However, by 1600 it had largely been abandoned, because the main timbers were often attacked by termites, and they tended to rot quickly in any case; wood was simply too expensive in the Old World to be wasted in this way. In fact, until archaeologists in North America began uncovering earthfast buildings on seventeenth-century sites, most English architectural historians thought the technique had completely died out by about 1500 (Carson et al. 1981). In the seventeenth-century Chesapeake, where wood was practically free and labor could be more profitably used growing tobacco than building permanent houses, earthfast building had a great resurgence. Most buildings of all kinds constructed in the region before 1725 were probably of this type (Carson et al. 1981; Kelso 1984; Outlaw 1990). Earthfast building was less common in New England and rare in Pennsylvania. The Swedish and German immigrants who helped populate the Pennsylvania region had their own tradition of easy-to-erect wooden buildings, using rough-hewn logs. In the long run, it was the Continental traditional of building with logs that won over most Americans, giving us the log cabin tradition of the American frontier. The earthfast building tradition nearly died out again in the nineteenth century, only to be revived by the invention of creosote and other wood preservatives in the twentieth century.

The McKeans' tenants chose to build their barns in the Chesapeake style, and they followed the English barn tradition in their form as well. The barns were rectangular, built on a level site, and their entrances were almost certainly in the long sides, facing the house. Such barns could be used for both sheltering animals and storing hay and grain. However, the 1797 tax return specifies that the farm included a separate "crib." The word is ambiguous, and could refer to a small storage structure, a large, barn-like building, or a shed attached to a barn (Herman 1987:205; Sloane 1950). In the reconstruction, the crib has been interpreted as one of the earthfast barns.

Postholes around the early well, located just 7 feet east of the house, show that it was covered with some form of structure. The other buildings shown in Figure 29 are not based on direct archaeological data. A kitchen is indicated in the 1797 tax record, but no foundations of such a structure were found. The kitchen is shown in Figure 29 east of the well, near a concentration of brick pieces in the plowzone. Numerous brick pieces were also found nearby, in a small pit (Feature 34). The count of brick pieces seems too high for just a few piers, so it is likely that a chimney once stood in the near vicinity. A shed is shown nearby. The smokehouse probably also stood in this vicinity, but it is not shown in the reconstruction. No fence lines dating to the early period were found, so the fences are shown as worm fences, which leave no trace below the ground. A critic might argue that showing these hypothetical buildings in the reconstruction is unscientific and misleading, and that Figure 29 shows more of the archaeologists' imagination than the site in the eighteenth century. But the tax record indicates clearly that a kitchen and other buildings stood somewhere on the property, and if they were not exactly where and exactly like those depicted, they were not far away and were something like them. Crude sheds were also very common, and it seems highly likely that the farm possessed at least one. Herman (1987:61) calculated that the average New Castle County farm in the 1760 to 1820 period had six to seven outbuildings. To reconstruct the farm without additional buildings would therefore be more misleading. Figure 29 at least has some chance of being an accurate reconstruction, while an illustration that shows only buildings for which foundations survive has no chance of being correct.

2. *The Later Farm*

The early house and farm buildings at the McKean/Cochran Farm were fairly soon abandoned in favor of an entirely new set of structures. The move to the new buildings can be roughly dated by the artifacts recovered from the early house and well. No nineteenth-century artifacts were found in these deposits. The new buildings were probably built, and the old ones abandoned, before 1810. Figure 30 is a reconstruction of how the farm might have looked in the later stage. The rebuilding of the farm may coincide with a change from tenant to owner occupancy, which took place some time between 1797 and 1810. However, the rebuilding of the farm need not correspond to any particular event in the ownership history, since the years around 1800 saw a major rebuilding of houses and farm buildings all over the eastern United States (Chappell 1994; De Cunzo et al. 1992:41).

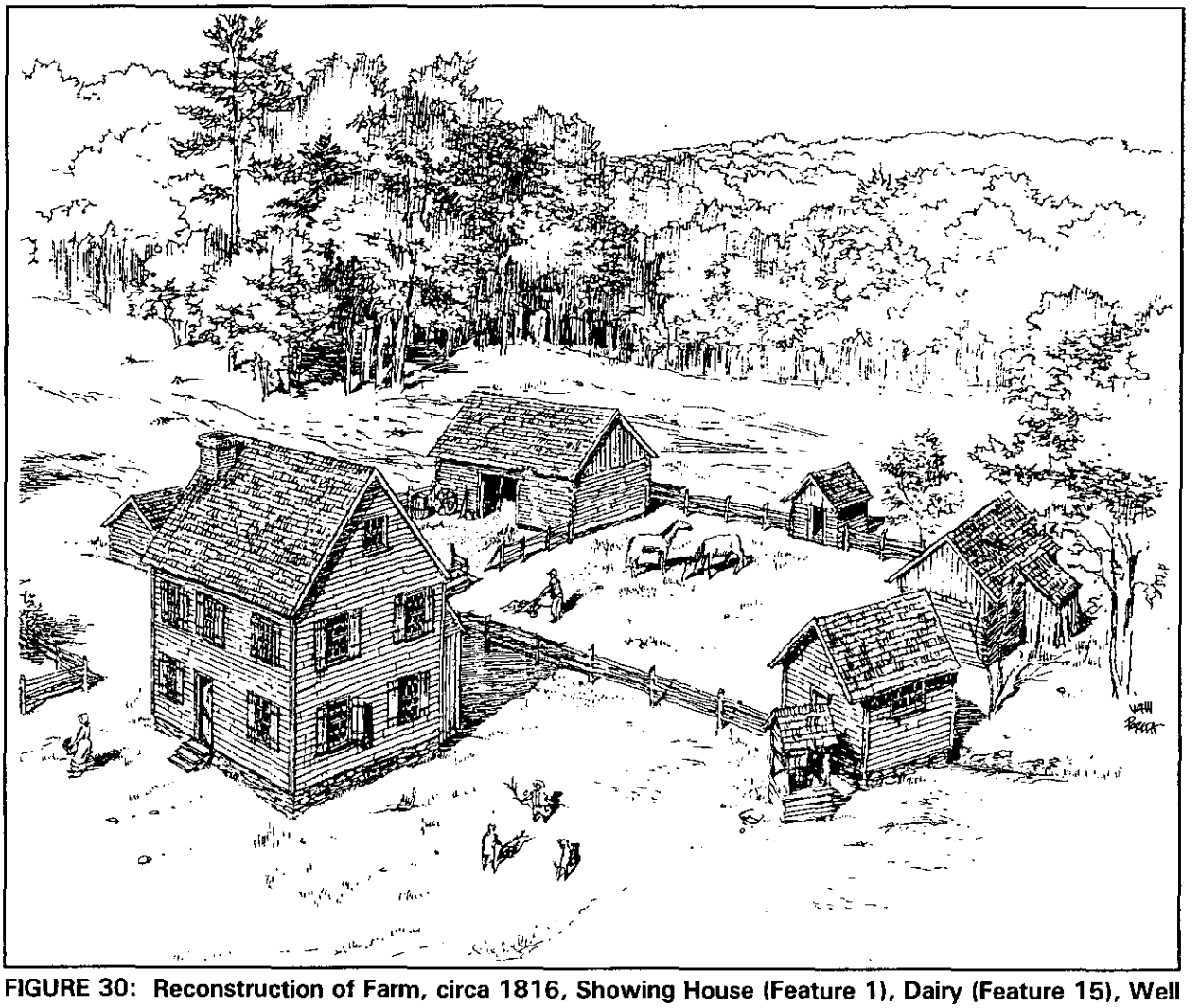

FIGURE 30: Reconstruction of Farm, circa 1816, Showing House (Feature 1), Dairy (Feature 15), Well (Feature 27), Log Stable Listed in 1816 Tax Return, and Sheds (Conjectural)

None of the buildings known to have been used during the early history of the site was used during the later period. The farm also moved slightly north, onto a more level area. The old house, at least, seems to have been abandoned fairly soon after the new structures were built, perhaps before. Most of the stones in the foundation were robbed for use in some new building project. The cellar was partially filled in with clay that must have been excavated from somewhere else on the farm, probably from the new cellar or well. The burned steps show that the early house burned, but the lack of artifacts in the very bottom of the cellar seems to show that it had been abandoned before it burned. It may even have been burned intentionally to make the recovery of foundation stones and nails easier.

PLATE 28: Balanced, Traditional House (Mount Jones, Odessa, built about 1750)

The new house measured 18 by 26 feet, 70 percent larger than the first house but still not large. In his work on tenant houses in central Delaware, Bernard Herman (1987) discovered that 450 square feet was a good dividing line between small houses, most of which were occupied by tenants, and large houses, most of which were occupied by owners. The McKean/Cochran house measured 468 square feet. Like the first house on the site, it was constructed on stone foundations and had a full basement. It faced west, not south toward the river like the first house. A westward orientation was not the first choice of colonial builders, who generally liked their front door to open east or south. The McKeans must have had some reason for choosing a westward orientation, and the most likely one is that they faced their door toward a lane that ran across their farm from Middletown Road to

the river. Attached to the rear of the house was a narrow cellar that was provided with a well-drained sand and oyster shell floor and was probably used for storing root vegetables. There is no evidence of what was above this cellar, but it has been reconstructed as a single-story shed. Some time later, a set of bulkhead steps was built across the storage cellar, providing access to the cellar from the outside for the first time. (Other examples of bulkheads added to eighteenth-century houses built without outside cellar access are known [Carson 1994:560].)

PLATE 29: Symmetrical Georgian House (Wilson-Warner House, Odessa, built 1757)

The cellar of the house was divided into two rooms, one of them 1 foot 8 inches deeper than the other. If the first floor of the house matched the cellar, it also had two rooms, which would make it what architectural historians call a "hall and parlor" plan. The facade of such a house was asymmetrical, as Figure 30 shows, since a door in the center of the facade would have opened onto the wall between the two rooms. There is no inherent reason why the cellar floor plan should be reflected in the upper floors, but the two-room, hall and parlor plan was one of the oldest and most common European forms, and the house was probably built in this way (Plate 28). The question is important, because in the period from 1760 to 1820 the traditional hall and parlor plan was gradually being replaced by new designs with a central passage and a symmetrical facade, and some historians see this change as a reflection of a major shift in European and American culture (Deetz 1977; Glassie 1976, 1982). The new symmetrical designs, often called Georgian, were based on Renaissance and ultimately classical notions of geometric proportion (Plate 29). The replacement

of traditional forms, which carpenters had learned from other carpenters for centuries, with new forms derived from academic concepts of beauty, seems to some people to reflect the demise of traditional, folk culture and its replacement by our modern culture of mass consumption. At least in terms of their houses, the McKeans seem not to have entered that world. In the new house, only one room, the hall, had a hearth. Builders in the Georgian tradition almost always used chimneys in matched pairs, both to heat the larger houses and to preserve the symmetry. Along with the two-room cellar, the absence of a chimney on the south end of the house argues strongly that it was a traditional hall and parlor design.

The rest of the later farm appears to have been arrayed behind the house in a courtyard plan. The courtyard plan had been in use in all parts of Europe, and it was one of the most common farm plans in the Middle Atlantic region (Glassie 1972). Although most of the numerous fence posts are difficult to resolve into fence lines, they clearly surround an area behind the house measuring about 80 by 100 feet. Experience with other farms organized on the courtyard plan suggests that the concentration of household activity in the work yard would have led to the loss of many objects there, so plowzone test units excavated in the courtyard area should contain relatively high densities of artifacts (Bedell and Luccketti 1988; De Cunzo et al. 1992; Grettler et al. 1995:81). Figure 23 (see Chapter V) shows that this was true at the McKean/Cochran Farm for both the early and late periods. The numerous gaps in the fences around this courtyard suggest that it was largely ringed by outbuildings. A large gap in the northeast corner of the yard is interpreted in Figure 30 as the location of the log stable mentioned in the 1816 tax return, with log and frame sheds around the other sides. No kitchen was mentioned in the 1816 tax return, so none is shown, although it is possible that one was present but did not seem to the assessor to be worth mentioning. If so, a likely place for the kitchen would have been immediately behind the house, where high brick concentrations were noted in some test units.

Both Letitia McKean and Robert Cochran owned slaves. In 1810 Letitia McKean owned at least one. Robert Cochran's 1816 tax return lists three, a lame man named Moses and two women named Hannah and Susan, and in his 1843 will he freed all of them. Neither documentary research nor excavation has provided information on where these slaves lived. Research on slavery in the border states, including Maryland and Delaware, has shown that on farms with small numbers of slaves, the slaves sometimes lived in a separate "quarter" and sometimes lived in the main house or even the barn (Fields 1985). No slave residence is shown in Figure 30, but one may have stood somewhere on the farm. In Chapter IV we noted that the dairy seems to have remained in use after the rest of the farm had been abandoned, and it is possible that it served as a slave residence. The dairy artifacts came from washed-in soil resembling the plowzone, and they include several objects from early in the history of the site. This mixed assemblage of mostly very fragmentary items cannot tell us much about the site's last occupants. However, the later artifacts from the dairy include a range of decorated ceramic plates and teawares, datable to after 1820, that are not noticeably poorer in quality than those from earlier in the site's history. Animal bones from the dairy include good cuts of both pork and beef, also not poorer than the collection from the earlier features.

B. CULTURE AND ENVIRONMENT

One of the most compelling questions about the history of eighteenth-century Delaware concerns the relationship between culture and environment in the American colonies. To what extent did European colonists in America retain the culture of their homelands, and to what extent did they change their ways to adapt to the new environments in which they found themselves? The question is one of the oldest in American history, and the debate that began over the issue more than a hundred years ago continues today (Bailyn 1986; Carson 1994; Fischer 1989; Greene 1988). A related question concerns the relationships between the cultures of the various European and African immigrant groups: to what extent did they maintain their distinctiveness, and how much did each contribute to the developing American culture?

Southern New Castle County makes a particularly interesting place to study these questions of cultural history. The region is topographically very much like the Chesapeake tidewater region of Maryland and Virginia, but culturally it was much closer to Pennsylvania (Glassie 1968). The relationship between cultural continuity and environmental adaptation should, therefore, stand out starkly. (The part of Maryland from which the Cochran family had recently come, the Susquehanna Valley, also belonged to the Pennsylvania or Delaware Valley cultural region.) The Delaware Valley cultural region as a whole also had more diverse European roots than the Chesapeake or New England regions. The population included large numbers of Germans, Scotch-Irish, and English Quakers, as well as smaller groups of Swedes, Dutch, and Moravians. Although at first these groups tended to keep their own, separate traditions, by 1750 they had begun to borrow from one another and to create a distinctive regional culture which took elements from several different immigrant traditions.

The obvious starting point for the discussion of the cultural and environmental history of the McKean/Cochran Farm is the dairy. The dairy, a springhouse in a land without springs, is a stunning example of a traditional technology maintained in an environment for which it was completely unsuited. Although the springhouse was a traditional part of many northern European cultures, including Scotch and German, its use in Pennsylvania and Maryland was particularly associated with German immigrants. Pennsylvania German farmers regarded the springhouse as one of the practical and symbolic hearts of the farm, and the presence of a suitable spring or stream was one

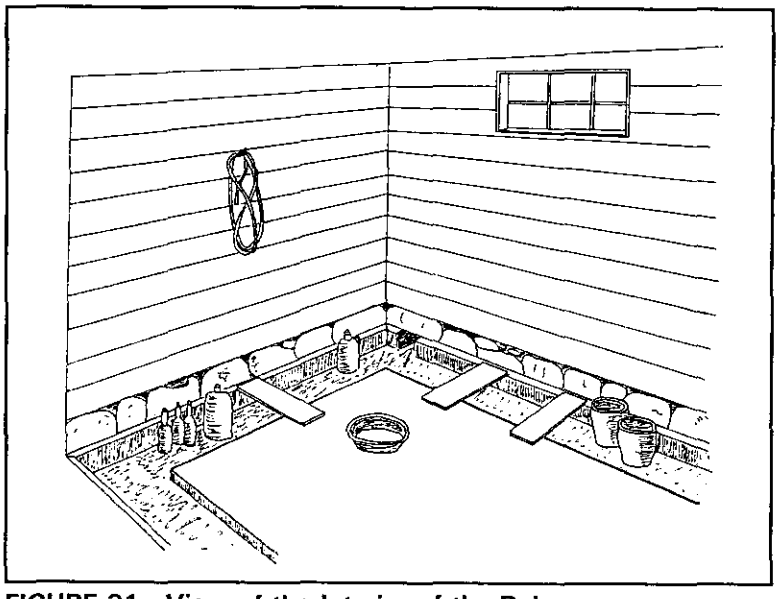

FIGURE 31: View of the Interior of the Dairy

of the main criteria they considered in choosing a site for their houses. They used springhouses for many purposes, not only for cooling milk, but for preserving fresh fruits and vegetables and for storing preserved foods such as vinegar and cider (Figure 31). The springhouse also protected the water supply of the farm from contamination, and the spring was also usually deepened inside the house to help preserve its flow in dry times. The amount of care invested in constructing springhouses was proportional to their importance. They were usually stone and were often massively built, with very thick walls and deep-set foundations. Sometimes they were also quite large, as large as a small cottage. Some of these structures were built so strongly that many stories are told in Pennsylvania, most untrue, about springhouses used as forts during Indian attacks. The result of this overbuilding is that one often sees old farms in Pennsylvania and Maryland on which the springhouse is the only surviving outbuilding (Long 1972:107-121).

The McKean/Cochran dairy was very much in this tradition. The site of the dairy was dug out about 3 feet into the ground, and the bottom filled with a foot of clay, probably to make the floor waterproof. The foundations were stone, and for the size of the structure, massive. (They were thicker than the foundations of the first house on the site.) A brick and plaster sill was installed all the way around the interior walls, and this sill was kept in repair. A drain to carry away the excess water was dug and lined with wood. The result of all this effort, however, was a structure completely unsuited to its location, because it had no spring. The water to fill the cooling channel had to be hauled up out of the adjacent well one bucket at a time. Proof that the dairy was used in this way is provided by the sand that eventually clogged the channels, which came up from the well with the water. The system must have worked to some degree, since the dairy was maintained for so long. The water from the well would have been cool, and the water channel was set 2 feet into the ground and shadowed by the thick stone walls. This system may have been enough to keep the milk cool for the 36 hours needed for the cream to separate, at least for most of the year, although it seems unlikely that it would have functioned in the heat of the summer.

Long before the McKean/Cochran dairy was built, English immigrants to the Chesapeake had already developed a dairying system that worked quite well in the tidewater environment. They simply dug holes in the ground and carried or lowered the milk into them to cool. In some dairy buildings the hole was only 3 feet deep, and would probably not have functioned well during the heat of the Chesapeake summer (Linebaugh 1994; Pogue 1990). However, storage pits up to 12 feet deep have been found on some sites (Bedell and Luccketti 1988). These pits are sometimes called ice houses by the archaeologists who discover them, but they were not necessarily used to hold ice and may have functioned as coolers. At Littletown Plantation, on the James River, the builders of a brick-lined well installed a cooling chamber off one side of the well about 12 feet below the surface (Kelso 1984:155). The builders of the McKean/Cochran dairy either did not know this technology or rejected it in favor of something more familiar.

Yet the builders of the dairy were not immigrants fresh off the ship from the German palatinate, nor were they Pennsylvania Dutch farmers isolated from English culture. The building of the dairy cannot be precisely dated, but its builders, whether McKeans or Cochrans, were well-to-do, well-connected, American-born farmers of Scots-Irish background. Their notions of what a dairy should

look like derived, not from memories of the old country, but from the developing culture of the Pennsylvania region. Another constituent of that regional culture was the bank barn or Sweitzer barn. The bank barn was derived from south German and Swiss prototypes, but by 1800 it had developed a distinctive American form (Long 1972; Noble 1984; Sloane 1950). These barns had two levels, a lower level for the animals to live in and an upper level for hay storage, and they were built into a slope. The sloping location allowed the farmer to drive a cart directly into the upstairs portion, and because the lower level was partially buried, it was warmer for the cows in winter and cooler in summer. These barns were also usually much larger than barns built in the English tradition, and visitors to eighteenth-century Pennsylvania often commented that the German farmers showed off their wealth by building bigger barns rather than bigger houses. One of the more interesting sights in the flat areas of Delaware and eastern Maryland is a large bank barn built on a completely level site, with a massive earthen ramp leading up to the second level (Plate 30) (Herman 1987:207-220). Several examples in southern New Castle County have been carefully documented by the Center for Historic Architecture and Design at the University of Delaware (HABS DE Nos. 217, 220, 227). At Retirement, a mid-nineteenth-century Cochran farm on the same property as Site 7NC-F-13, a Pennsylvania-style bank barn stood until only a few years ago, testimony to the builders' cultural associations.

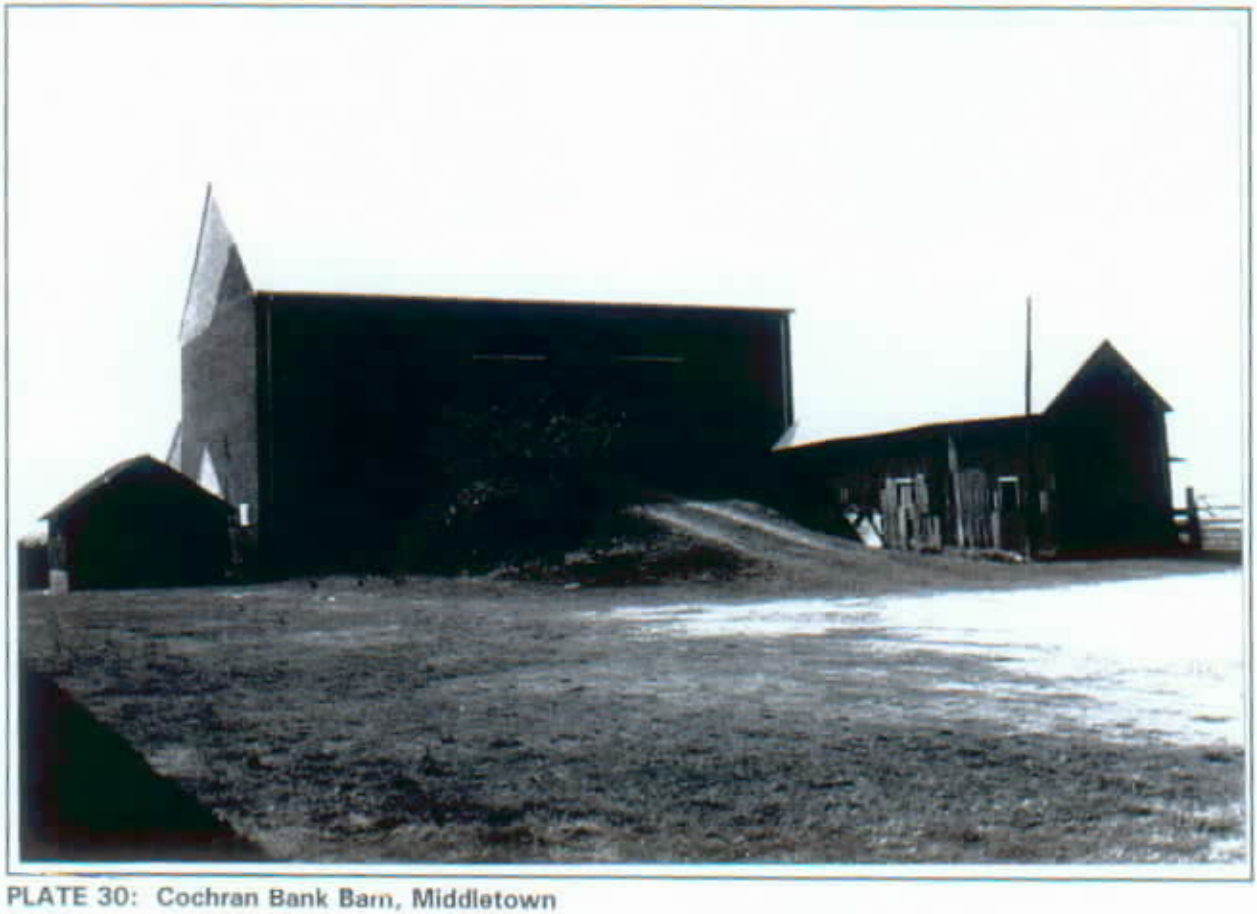

PLATE 30: Cochran Bank Barn, Middletown

These barns represent the same mismatch of form and environment as the McKean/Cochran dairy. In both cases a building form, originally from Germany, was taken up by the Pennsylvania regional culture and then used by people of British background in an area for which it was not at all suited. A bank barn was a much-admired design in the nineteenth century, and its use in flat country was not absurd in the same way as a springhouse with no spring. Bank barns were promoted by agricultural reformers who advocated the use of "scientific" agricultural techniques to reclaim Delaware's exhausted soils, and they were built from 1809, the date of the earliest standing example, until at least 1880. The design did have some real advantages. Yet these barns were not as "scientific" as their advocates claimed, and there is no evidence that the large amount of labor needed to build the ramp was ever repaid by the convenience of the design. The form was never widely adopted in either the South or the Midwest, and in Delaware it began to fall out of favor after the Civil War. The bank barn fashion in Delaware shows that although the agricultural reformers of the early nineteenth century did have some genuinely improved techniques, such as liming and fertilizing with guano, they were also advocating a cultural model of the "efficient" farm based primarily on the German farms of Pennsylvania. Indeed, some of their books devoted as much attention to moral improvement as to farming technique (Adams 1990; Herman 1994). The building of bank barns in flat areas shows again that the people of the region preferred to impose their culture on the landscape rather than adapt to their surroundings.

Other features of the McKean/Cochran Farm can also be related, although with less certainty than the dairy, to these cultural developments. The first barns on the site, Structures A and B, were earthfast post structures of a kind that originated in England and flourished in the Chesapeake region. At least one of the later barns, and probably more, were built of logs, a technique with Continental antecedents that flourished in Pennsylvania and on the Appalachian frontier. The McKeans did not, however, adopt the bank barn form, and the Cochrans did not do so until after they abandoned the McKean/Cochran Farm. Another and even more fundamental change, at least within the Cochran family, was in the labor supply used on the farm. In 1800 John Cochran had owned 13 slaves. At his death in 1843 Robert Cochran freed most of his remaining slaves, and the census records show that he also employed white servants. By turning away from slave labor toward free labor, the Cochrans were again turning away from the Chesapeake model toward the Pennsylvania or Middle Atlantic way of doing things.

C. ARCHITECTURE, LANDSCAPE, AND MODERNIZATION

In the eighteenth century, leading thinkers in England and America decided that the traditional European ways of building houses and laying out farms were disorderly, irrational, unattractive, and generally unsuitable for the new, enlightened age. A traditional English house had only one or two rooms on the first floor, and all kinds of activities took place in these rooms: sleeping, eating, cooking, entertaining, and business. The furniture in these rooms reflected their diverse functions, and we find accounts of rooms that contained two or three beds, a table for eating, chairs, a spinning wheel, cooking equipment, and chests full of clothing and dishes. The outside doors opened directly into the main room, with no entryway for formal greeting or wiping muddy boots. Even the houses of kings were built in this unspecialized way; at Louis XIV's Versailles, for example, important

business was often conducted in the king's bedroom. The other buildings on a traditional farm were arranged very roughly in one of several patterns, of which one of the most common, and the one that seems to have been used at the McKean/Cochran Farm, was the courtyard plan. On such a farm, the barns, sheds, and other outbuildings were arranged around a courtyard behind the house, but not in any uniform way; for example, the buildings might be oriented in a variety of different directions, and sometimes buildings were put right in the middle of the court.

Beginning in Renaissance Italy, architects began to reject this medieval disorder in favor of regular, structured, symmetrical plans influenced by Greek and Roman buildings. This movement, usually called Georgian in England and America, began with the houses and gardens of the great aristocrats and slowly spread to the upper and middle classes. The new, Renaissance standards for houses required that rooms be provided for each common activity in the house, so that a house would have separate living, dining, and bedrooms, and a separate kitchen. Sometimes a separate office was provided for business. Entrance was into a hallway, which provided a sort of buffer between the domestic space within the walls and the world outside. The building's face had to be symmetrical, with the windows arrayed around a central door in proportions copied from classical models. This facade presented the world with an image of order and control suitable for a great family in the Age of Reason. The yard was shaped into a setting for the house, with approaches designed to impress visitors with the grandeur, or at least the respectability, of the owners. Formal courts were created in front of some houses by using matching pairs of smaller buildings on either side of the entrance. Activities that created a mess or caused unpleasant odors, such as butchering, were moved away from the house, as were untidy creatures, such as pigs, and field workers. The famous American houses of this type include Thomas Jefferson's Monticello and George Washington's Mount Vernon, which both served as stages where great men of the new age could act out their lives in suitably grand and rationally apportioned settings. The fashion was not only for the grand, however. Hundreds of less wealthy people also built houses in the new style, and it was widely proclaimed as a model for all to follow (Herman 1987).

In both its architecture and its layout, the McKean/Cochran Farm was a traditional place. The first house was of a traditional one-room design, the most common type in eighteenth-century America. The second house appears to have been of a traditional two-room hall and parlor design. It was certainly not a fashionable Georgian house, since it had only one chimney and would therefore have presented an asymmetrical facade, unpleasing to the classically trained eye. Nor was it particularly large; some tenants in Delaware lived in larger places, and some wealthy farmers had houses more than twice as big. The house was well built, with a full basement and strong stone foundations, much more permanent than the houses of William Strickland and John Powell from earlier in the century. It also had many windows, and it was probably reasonably comfortable to live in. But by the standards of enlightened taste, it was hopelessly out of date before it had even been finished.

It is worth pausing at this point to reflect on the economic and social background of the McKean household. Letitia McKean Clark was a wealthy woman, raised in an environment of affluence and social grace. One of her uncles, Thomas McKean, was the governor of Pennsylvania, and her cousin Sally had married into the Spanish nobility. Her estate papers show that she owned a marvelous

wardrobe of clothes. Her first husband was a prominent Presbyterian minister with estates of his own and a pair of fine horses to pull his carriage. Little is known about her second husband, but he is unlikely to have been poor. At the time when she and her husband were building their new house, more and more wealthy Americans were indulging in the construction of grand houses that gave physical embodiment to their social aspirations. One historian has recently commented that "Delaware eighteenth-century rural society divided itself between people who lived in five-bay, two-story brick houses and those who could not" (Heite 1997). The McKean/Cochran house shows that while the grand, symmetrical, Georgian brick house may have been established as the ideal for wealthy people by 1800, construction of houses in this style was by no means universal in practice. Letitia McKean, who had attended balls in Philadelphia with the American elite and the European nobility, did not feel that she needed such a house for her country residence. Similarly, Robert Cochran, a wealthy man from a wealthy and prominent family, lived in the McKean house after he purchased the farm in 1814. He and his sons later built grander houses, but he had been satisfied with the 18-by-26-foot frame house he had purchased for at least his first decade on the Appoquinimink. A grand house was still not seen as a necessity for a wealthy family, and other factors could override the increasing social pressure to build or buy one (Chappell 1994; King and Miller 1984). Any desire Letitia McKean may have had for a large, impressive house was probably lessened by the strong connections she kept up with her relatives in Pennsylvania and New Jersey, where, her estate papers show, she maintained a separate household. If she never thought of the farm on the Appoquinimink as truly her home, she may not have felt any need to invest heavily in a stylish house there. In the case of Robert Cochran, it was probably economic considerations that limited his ambitions, and the construction of a large, new house had to wait until he had invested sufficient time and capital in his new farm.

The layout of the farm also appears to have been traditional. It probably followed the courtyard plan in both periods. In neither period, however, was the arrangement perfect or symmetrical. Structures A and B, the barns of the early period, did not align exactly with Feature 4, the house. The dairy, Feature 15, was more than 5 degrees out of line with Feature 1, the second house, and none of the fences exactly aligned with either building. The farming practices of the residents also seem to have been rather traditional, although the large number of milk pans found on the site suggests that the residents may have run a commercial dairy. The barns on the site were in the old style, and the Cochrans did not build a new-style bank barn until after they moved from the site. Certainly the nineteenth-century residents did not employ contour farming, a technique promoted by George Washington and other agricultural reformers; the plow scars across the site run straight up and down the slope, and as a result, two to three feet of soil seems to have eroded away. Neither scientific agriculture nor Renaissance architecture had reached this spot on the banks of the Appoquinimink River.

D. MATERIAL THINGS AND CULTURAL CHANGES

Scholars who study objects from the past, whether dug out of the ground or preserved in museum collections, often speak of their field as "material culture." The material culture of a farm, such as the McKean/Cochran Site, includes things made on the farm as well as those bought by the residents.

However, the things eighteenth-century farmers could fashion for themselves were mostly made of wood or other perishable materials. Most of the things that endure are made of ceramic, glass, or metal, which ordinary farmers could not make. For the most part, the objects that historical archaeologists dig up are things that people bought, and many of these were made in factories in England. Nevertheless, they can tell us a great deal about the people who bought them.

When historians and sociologists want to describe modern society, and distinguish it from the society of other times, they often point to the importance of consumption. We are consumers, defined to a great extent by what we buy. We think we can identify the different groups in our society by the things they have bought, whether we are discussing economic groups such as the rich, the poor, and the middle class, or cultural groups such as punk rockers, preppies, Dead Heads, gang toughs, and the horsey set. Consider these three lists of possessions:

1. *Condominium, BMW, laptop computer, skis, coffee press;*

2. *Mobile home, used Ford pickup, shotgun, denim jacket with fleece collar;*

3. *Volkswagen microbus, Peruvian wool sweater, beads, box full of bootleg tapes.*

We look at these lists of objects and believe we know a great deal about the people who own them. We may recognize in principle that the distinctions suggested by the lists fit certain stereotypes, and that all people are in fact different, but we still form notions about others based on the things they own and are surprised when the equation falls through. In our world, the things people own are related to social factors such as their class, their level of education, and the kind of work they do, as well as to whether they are young or old, male or female. But our possessions may be related to our notions of beauty, our feelings about new technology, our conceptions of order and harmony, and our understanding of our society and our place in it; in short, to our personal philosophies and values (Ferguson 1977; Meltzer 1981).

Historians spend much of their time considering the past and the ways in which it was like, and unlike, the present, so when they note the importance of consumer choice in our world they immediately wonder how important it was in past societies. Most people have at least a vague idea that consumer choice was less important in the past, if for no other reason than that there were fewer consumer goods to choose among. If this is true, when did consumerism, in the way we know it, arise? Was it a revolutionary change, or a very long and slow process? What impact did it have on other areas of life? These questions have inspired much debate and a large body of scholarship, but we are nowhere near being able to answer them. Historians have placed the origins of modern consumer society in the sixteenth century, the eighteenth century, at the end of the nineteenth century, and in the 1920s, and beyond this basic disagreement about the date lies more profound disagreement about the meaning and importance of these changes (Shammas 1989).

In the eighteenth century several important changes took place in Europe and European America that definitely influenced what people bought and how they used consumer goods to define themselves.

From the archaeological point of view, two of the most important eighteenth-century social changes were in dining habits. A medieval banquet had been a display of hierarchy, with the participants seated in rank order from the head of the table to the foot (a theme that figured in many legends, because heroes fought duels over the right to the best seat or the best cut of meat). In the eighteenth century, however, a new fashion in dining emerged among the aristocracy in which people sat around oval tables in a way that encouraged them to think of each other as equals. Their class superiority was maintained, not by seating order in a great banquet, but by their knowledge of a new set of table manners. Dinner was held in a separate dining room, part of a trend in which houses were divided into specialized rooms. Each diner was presented with a fork (introduced into western Europe in the seventeenth century), a separate plate, and a variety of other dishes that, at least at first, only aristocrats knew how to use. At about the same time the drinking of tea spread widely in Europe, along with a ceremony for its proper use and a special set of dishes. The tea ceremony, as it was called, required the possession of a teapot, a set of teacups or bowls, a set of saucers, the tea itself, along with sugar, and, what was most important, the knowledge of how to use all these things. For a while, from about 1680 to 1720, possession of the requisite dining and tea-drinking equipment and skill in its use defined a member of the upper class. These changes can be seen as a symbol of a new definition of social status, in which a high position depended not only on ownership of land and jewels, but on the possession of a superior education, which for upper-class men came to mean taking a university degree.

After 1720, however, this dining equipment and the knowledge of how to use it spread rapidly among the middle and even the lower orders. Tea drinking, in particular, was taken up by millions of ordinary people, thanks in part to the falling prices of tea, sugar, and porcelain brought about by improvements in shipping and the growth of world trade. Studies of probate inventories (lists of the possessions of people who died without wills, made for tax and estate purposes) have shown that by 1800 at least half of households in the British colonies owned tea-drinking equipment, and archaeological results suggest that the number was even higher. All of the eighteenth-century sites mentioned in this report, even slave quarters, yielded sherds of teacups. It seems that people spent as much as they could afford on their tea sets. Their teacups were often much finer dishes than their plates or bowls, and the better dishes archaeologists find on the average late eighteenth-century farm site are almost always parts of tea sets. Tea drinking was, as Lorena Walsh (1992:239) has written, "the primary way the poor could participate in the rising culture of respectability." The wealthy responded to the spread of refined dining by developing ever more elaborate sets of dishes and protocols for their use, leading in the later nineteenth century to grandiose table settings with pickle forks, shrimp forks, cream soup bowls, sugar tongs, and dozens of other specialized implements.

With this background, it is hardly surprising that the excavation of the McKean/Cochran Farm produced a full set of dishes and dining implements. Fragments of teacups and saucers were found in every major feature, and the teawares were, as one would expect, generally the nicest and most expensive dishes from the site. Most of the oriental porcelain found on the site was from tea sets, and all of the matched sets of dishes identified were tea sets. Five forks were found, and a large number of knives and spoons, as well as stemmed glass goblets and glass tumblers. However, archaeological data do not suggest that the introduction of refined dining happened in a revolutionary

way. Comparison of the table and teawares from eighteenth-century sites in Delaware shows that tea-drinking equipment first appeared around 1730 and became increasingly common from then on. The earliest fork found in Delaware, at the John Powell Plantation Site, probably dates to the 1720s (Grettler et al. 1995). Stemmed glass goblets, however, had been introduced more than a hundred years before, and are common on sites from the seventeenth century. Houses suitable for this new kind of entertaining, with separate dining rooms and parlors for taking tea, were built in the eighteenth century only by the wealthiest Americans, and not even by all of them. Letitia McKean and Robert Cochran were people of considerable wealth, but at the McKean/Cochran Farm they lived in a traditional house with just two rooms on the ground floor and a single chimney. The findings from excavations at the McKean/Cochran Farm and other sites in Delaware suggest that changes in eighteenth-century consumer habits were gradual, not rapid or revolutionary.

Did eighteenth-century people use their buying habits to define their identities? Archaeological data suggest that broad cultural and economic patterns may have had more impact on what people bought than individual eccentricities. At first glance, what is most striking about archaeological assemblages from eighteenth- and early nineteenth-century sites is how much alike they are. The artifacts change a good deal over time, but the sites from any given decade are all very much the same. For example, the ceramics and glass from the home of Charles Robinson, a well-to-do farmer and holder of public office (Thomas et al. 1994), were very similar to those owned by William Strickland, another well-to-do farmer (Catts et al. 1995), by Samuel and Henrietta Mahoe, less well-off property owners (Bedell 1997), and the tenants at the McKean/Cochran Farm. The biggest differences divide the homes of the rich from those of the poor, and these differences are largely in the amount of material recovered; the rich had more of the same things. All eighteenth-century sites in both the Delaware Valley and the Chesapeake region produce coarse and refined ceramics, bottle glass, cow, pig, and chicken bones (no vegetarians), iron tools, and tobacco pipes (no non-smokers, either). The introduction of the tea ceremony may have divided people for a while, but before long almost everyone had some tea-drinking equipment, so the change tended to unify the society more than to divide it. Further analysis of the assemblages does, of course, point up differences, but one should never forget how similar the collections really are.

Wealth did divide people, but archaeologists can almost always recognize the wealthier people by the same list of items: matched sets of teawares and tablewares in expensive patterns, fancy dishes such as punch bowls and jelly molds, gold buttons and jewelry, elaborate horse harnesses, carriage parts, and big houses. This study has confirmed the suggestion made by other archaeologists (Fithian 1994; Catts et al. 1995), that people living in the Delaware Valley owned somewhat different items from people in the Chesapeake region, particularly in ceramics and glass. The most obvious differences among sites are those of wealth, culture, and region, not individual choice. We see very little evidence of personal style. Wealthy people certainly did have some choices, and some of these are visible archaeologically. For example, not everyone who could afford a big brick house chose to build one. Studies of probate inventories have shown that wealthy people were much more likely to own luxury goods like clocks, carpets, silver plate, and carriages, but these same studies show that no level of wealth guaranteed that anyone would possess all of these things (Carr and Walsh 1994; Shackel 1993; Walsh 1992). It is true that some of the items people may have used to

express their taste, such as clothing and jewelry, are very poorly represented in the archaeological record, but the large amount of data we do have emphasizes similarities, not differences. At the McKean/Cochran Farm, we see the residents mostly as members of their social class and regional culture, not as consumers with individual tastes in the twentieth-century style.

E. CULTURE HISTORY

Another theme considered as part of the research at the McKean/Cochran Farm concerns the distinctions we use to divide people of the past into groups. The most common distinctions used are race, class, ethnicity, and gender, but many other distinctions are possible. In the past 20 years historians have been very interested in these divisions of American society, and they have now been incorporated into the National Park Service criteria for evaluating historic sites. More and more, historians are asking whether we can describe an "American culture" at all in a society so deeply divided into different groups. How important are these distinctions archaeologically?

Within historical archaeology, it must be said that the most important and easily visible division is not race, class, ethnicity, or gender, but time. From some points of view it may make sense to call John Kennedy and Captain John Smith upper-class white men, but it makes no sense archaeologically. They lived in different kinds of buildings, constructed according to different notions of space; they ate different foods, using different kinds of dishes and utensils; they traveled by different modes of transportation; they used almost no artifacts that we could not confidently assign to one or the other at a glance. The great social, economic, and technological changes of the past 300 years, especially those brought about by the industrial revolution, have so greatly remade the world that we who live after them belong to a completely different culture, in archaeological terms, from those who lived before.

Beyond the division of time, and the basic cultural division that separated Europeans and Africans from the Indians they displaced, distinctions are more subtle. The data from the McKean/Cochran Farm highlight one possible way to divide the past—according to cultural regions. In the eastern United States, historians have identified five important cultural regions: the North, the Middle Atlantic, the Midwest, the Upland South (Appalachia), and the Lowland South, which includes the Chesapeake (Fischer 1989; Glassie 1968). The differences among these regions include the forms of houses and barns, music and the instruments used to make it, marriage practices, speech patterns, clothes, and the usual way of making everything from fences to chairs. Central Delaware belongs firmly to the culture of the Middle Atlantic region, which developed in the Delaware Valley and is distinguished by a mixture of British and German cultural traits. The McKean/Cochran Farm provided much evidence that its residents belonged to this culture, including their springhouse and their use of slip-decorated pans and pie plates. In Chapter V we compared the artifacts from several sites in the Delaware Valley to those from several sites in the Chesapeake region, and we found broad similarities in the kinds of artifacts recovered. Tea drinking spread in both regions at about the same time, as did the use of forks and ceramic plates, showing that these people all belonged in some sense to a single Atlantic world. However, we also saw consistent differences. Several types of coarse earthenware kitchen vessels, such as pans, dishes, and large bowls, were much more

common in the Delaware Valley, which suggests differences in how people in the two regions cooked, and glass wine bottles were much more common in the Chesapeake region. These differences were found for all types of sites, including those occupied by wealthy farmers, poor tenants, great planters such as Thomas Jefferson, and slaves. The artifacts show that these regional cultures did have a real impact on how people lived, and that these cultural divisions cut across lines of race and class. The sites we examined suggest that these cultural differences developed in the course of the eighteenth century and were more pronounced at its end than at its beginning.

The differences between the Delaware Valley and the Chesapeake ought to be related to the other ways of dividing people we have discussed, especially gender and race. Historians think that women's lives were quite different in the Delaware Valley than they were in the South (Fischer 1989; Jensen 1986), and the lives of Delaware's mostly free blacks must have been quite different from the lives of the slaves on plantations in the Chesapeake region. However, both gender and race are hard to envision archaeologically. Women are less visible archaeologically because they almost always lived in the same households as men. We feel lucky when we locate an artifact deposit that we can associate with a particular household, and it is almost unheard-of to find a deposit that can be associated with a single person (Deetz 1982). Except in cultures which buried their dead with numbers of artifacts, very little information has been produced by attempts to learn about differences between men and women using the archaeological record. James Gibb and Julia King (1991) tried to identify separate areas of men's and women's activity in the yards of seventeenth-century Chesapeake sites, but they had little success. Diana diZerega Wall wrote a book titled *The Archaeology of Gender* (1994), but insofar as her argument actually deals with differences between women and men, it depends entirely on documentary history. Less than a quarter of her book actually treats archaeological data, and that section is called "The Ritualization of the Family Meal." Archaeologists can study families, but individual people, whether male or female, are rarely visible.

The archaeology of race is a large and contentious topic, for the most part beyond the scope of this report, but it does seem appropriate to make a few comments on how race differences relate to regional differences. Race was a very important division in eighteenth-century society, but it is hard to identify archaeologically, at least in Delaware. Archaeologically, cultural distinctions according to race are not as hard to recognize as those associated with gender, since black and white people did live in separate households, and black sites have been identified. Some Africans did bring with them their own distinctive ways of building and making things and did maintain them in the New World (Vlach 1978). Buildings have been identified in the South and even in New England that were built according to African designs (Deetz 1977; Vlach 1986). However, no sites occupied by blacks in the eighteenth century have been identified in Delaware. The identification of the known black sites, all dating to the nineteenth century, has depended on written records (Catts and Custer 1990; Hoseth et al. 1994). Without documents telling us that the occupants of the site were black, we would have no way of making that determination, since no researcher working in the Middle Atlantic region has developed rigorous criteria for distinguishing sites occupied by African-Americans from sites occupied by European-Americans. Because the kind of documentation that has been used to identify black tenant farmers in the nineteenth century is rare for the eighteenth century, the problem of identifying black eighteenth-century sites remains difficult. We have considered the possibility that

the dairy at the McKean/Cochran Farm was occupied by slaves, or recently freed blacks, but the artifacts do not provide any clear evidence. Blacks in eighteenth- and nineteenth-century Delaware were almost all poor, much poorer, on average, than whites, and their poverty should be visible archaeologically. From our present knowledge, however, it seems that the material lives of poor blacks were quite similar to those of poor whites. These groups lived in similar houses, ate similar foods, and used similar tools and dishes (Bedell et al. 1997; Catts and Custer 1990; Hoseth et al. 1994). Many blacks also lived in the households of whites, as the slaves of Letitia McKean and the Cochrans probably did, and the identification of these people presents the same problems as the identification of women; we know that some of the objects we find were used by the slaves, but do not know which ones. Perhaps recognition of the difficulty of identifying black sites in Delaware is an important discovery, since many slave-quarter sites have been identified in the Deep South, and some differences have been noted between the artifacts from slave and white sites (Otto 1984).

One final, and very specific, point to make about regional culture concerns the eating of muskrats. Today, the only Americans who eat much muskrat are the residents of Delaware and the eastern shore of Maryland; most other people find the notion somewhere between amusing and disgusting. Archaeological data suggest that this distinction dates back to the eighteenth century (Catts et al. 1995; LeeDecker et al. 1990). Muskrat bones have been found on several Delaware sites, including the McKean/Cochran Farm, but they have not been identified on any site in Virginia or on the western shore of Maryland. The large amount of very careful faunal analysis carried out on the collections from Kingsmill in Virginia and St. Marys County, Maryland, failed to identify a single muskrat bone (Kelso 1984; Miller 1984). People on the western shore ate raccoon, opossum, squirrel, and a wide variety of fish, frogs, and turtles, but never muskrats. If a regional culture can make people eat muskrats, it is a very real thing, not an invention of historians.

F. DIRECTIONS FOR FUTURE RESEARCH

At the end of every major project comes the question, what next? From our excavation of the McKean/Cochran Farm we have learned much about life in eighteenth-century Delaware, but we have also identified areas where we know little and would like to learn more. We also tested a number of archaeological techniques, some of which worked very well and some of which did not.

1. Regulatory Issues

The excavation of the McKean/Cochran Farm was carried out within the historic preservation plans of the federal government and the state of Delaware, and it showed those programs to be working well. The site was identified and evaluated well in advance of construction, so that adequate time was available for the excavations; and a good deal has been learned about eighteenth-century Delaware from this work. One problem raised by the excavations at the McKean/Cochran Farm is the lack of a well-developed historic context for eighteenth-century sites in Delaware. The federal guidelines emphasize that sites should be evaluated in context, and that decisions must be based on a firm understanding of the cultural and historical background. Existing historic contexts for rural life in New Castle and Kent counties in the 1830 to 1940 period (De Cunzo and Garcia 1992) and

Sussex County in the 1770 to 1940 period (De Cunzo and Garcia 1993) were useful, but a context specifically designed for the time period of the site would have been very helpful, and the development of such a context is recommended.

2. Archaeological Techniques

A number of field and laboratory techniques were employed during the McKean/Cochran Farm project, and the effectiveness of these techniques varied. The fieldwork began with the excavation of a 5 percent plowzone sample across the site. This testing identified patterns in the distribution of artifacts across the site, especially a clustering of coarse earthenwares and tobacco pipe fragments around and south of the dairy, which may indicate a work area. The function of the dairy could not have been guessed from the artifacts found within the structure itself, but many pieces of milk pans were found in the surrounding plowzone, indicating that it may be possible to identify dairy buildings on other sites from plowzone data. Brick concentrations that were probably the remains of buildings were also found. Although the physical layout of the farm changed a great deal over the course of the site's occupation, our attempt to chart that change using the plowzone artifact distribution was not successful. It does not appear that excavation of a larger plowzone sample would have provided more information. The patterns identified were on a large enough scale that the sample probably showed most measurable variations.

Feature excavation began with sampling of the features to determine which ones would repay intensive effort, and this technique appears to have been generally successful. Feature 4, the cellar of the first house, which was nearly sterile at its south end but contained artifact-rich deposits at its north end, showed that this sampling technique must be used with caution. Much of the upper fill in Feature 1, the later cellar, was removed with a backhoe, and this technique also seems to have worked well. The artifacts in this cellar were concentrated in a dense rubble layer, which was easily distinguishable from the washed-in soil above it, so the backhoe removed none of the artifact-rich deposits. With the assistance of heavy equipment, it was possible to excavate all of the rubble fill and expose all the foundations, without excessive cost. This technique might be expanded. For example, Feature 2 at the McKean/Cochran Farm, which appeared to be a cellar that was never completed, was only partly excavated, and on reflection it might have been simple and inexpensive to remove the remainder of the fill with a backhoe, making sure that valuable architectural information was not missed somewhere beneath the sterile fill. Because few eighteenth-century houses and even fewer eighteenth-century outbuildings are still standing (Herman 1987), architectural information remains one of the most critical needs for historical archaeology in Delaware.

The excavation of the wells on the site was not entirely successful. The technique employed was to excavate the upper 4 to 5 feet of the well by hand, without shoring. In the case of Feature 29, the earlier well, substantial numbers of artifacts were still being recovered at that depth, so a backhoe was employed to enlarge the excavation in order to continue it to a greater depth. By a depth of 6 feet the fill had become sterile, and augering showed that it was still sterile at 12 feet, so excavation of the well was abandoned. However, 12 feet was probably nowhere near the bottom of the well;

pits excavated a few yards from the site for geological testing reached a depth of 30 feet without filling with water. Eighteenth-century wells at Kingsmill in Virginia were as much as 60 feet deep (Kelso 1984). Therefore, artifact-rich deposits may have been present deeper in either well. Properly shoring a well for hand digging to that depth, however, is technically demanding and very expensive (Dent et al. 1997). To excavate fill from wells, it might be worth exploring the use of heavy equipment, such as the Gradall we watched dig the 30-foot-deep geological test pits in less than an hour each. This method would not be gentle, but it might recover some data.

The analytical techniques most useful for understanding the history of the site were the ceramic Minimum Number of Vessel determinations and the study of the bones. The Minimum Number of Vessel determinations allowed a much better understanding of the ceramic and glass collections than just counts of sherds, telling us, for example, the proportions of vessels devoted to different functions. Minimum vessel counts also made it easier to compare the ceramic collection from the site with those from other sites. Minimum vessel counts have been made at all major eighteenth-century Delaware sites and the practice should be continued. Persistent variations in the way different archaeologists name and classify ceramic vessels make these comparisons difficult, but they should still be pursued. The use of flotation to recover plant material was not very successful at the McKean/Cochran Farm. Although 35 liters of soil from contexts with good organic preservation was floated, only a few seeds from eighteenth- and nineteenth-century contexts were found. Small bones, fish scales, and small artifacts such as pins were recovered during the flotation, so the technique did have some value in other areas. Since interesting plant material has been recovered from other historic sites using flotation (Catts et al. 1995; Kelso and Most 1990), the technique should not be abandoned because it failed on this one site.

3. Research Issues

Work on the McKean/Cochran Farm Site has led to the identification of several research themes that could be carried further in the future, and has brought to mind some additional questions that could not be addressed at this site. One small point raised but not answered by excavations at the McKean/Cochran Farm is the relationship between cellar floor plans and the layout of the houses above them. We assumed, as did the excavators of the Darrach Store Site (De Cunzo et al. 1992), that the division of a cellar into two rooms, with a central wall, was probably reflected in the layout of the first floor of the house. However, we are familiar with no actual data on the question. Architectural historians do not seem to be interested in cellars, and their books rarely mention them. A study of the cellars of standing houses in the Delaware Valley region would be a great help in interpreting eighteenth- and nineteenth-century sites excavated in the future.

Our work at the McKean/Cochran Farm was focused on the cultural history of Delaware, and it has supported the identification of a regional archaeological culture in the Delaware Valley. The rather limited comparative study of artifacts carried out as part of this project showed that this culture can be distinguished in some ways from the culture of the Chesapeake region, and suggested that these regional cultures were not clearly defined in 1700 but developed in the course of the eighteenth century. However, the comparative work undertaken here has been very limited and needs to be

expanded. More sites have to be considered, and other variables, such as diet and housing, have to be brought into the comparison. Comparisons also need to be made with other regions, such as New York and New England. The definition of cultural regions in the United States depends heavily on standing buildings and barns, most built in the nineteenth century, and archaeology can supply important additional data on house and farm plans in the eighteenth century, when these regional cultures seem to have developed. This question again underscores the importance of architectural information, which is one of the most significant categories of data that can be recovered from eighteenth-century archaeological sites. Research on cultural regions could also be extended into documentary history, employing, for example, probate inventories and tax lists to investigate other differences in the material culture of the regions.

One issue we pursued in some detail for this project was the relationship between the culture the residents of the McKean/Cochran Farm brought with them to the region and the environment in which they lived. The dairy building at the site suggested that the occupants preferred to impose their culture on the environment rather than adapt themselves to their surroundings. Certain other practices of the time, including the building of bank barns on perfectly flat sites, also lead toward this conclusion. Historians have long studied the relationship between American settlers and their environment, and the study of how people relate to the natural surroundings is also central to many anthropological studies. Historical archaeologists should continue to examine these issues. For example, are variations in available wild foods reflected in faunal remains? Did environmental considerations influence the kinds of domestic animals raised and the ways they were exploited? Were building styles influenced by environmental factors? Were sites placed to have access to important resources, such as fresh water, or to avoid environmental hazards, such as malarial swamps? Detailed analyses of how sites were situated, their water supplies, regional variations in architectural styles, and animal and plant remains might help us understand these issues better.

Historians and archaeologists have been focusing a great deal of attention on the modernizing developments of the eighteenth century, but more remains to be learned about them. We would like to know, in much greater detail, to what extent the lives of people in different social, economic, and ethnic groups were changed by the global economic developments of the time, and how much impact the new aesthetic ideas and intellectual systems had on the society as a whole. In this report we have argued against a "consumer revolution" in the eighteenth century, but much more could be done on the question of how much choice eighteenth-century consumers had, and how they used it. Rather few tightly dated eighteenth-century artifact deposits have been investigated in Delaware, not enough for real insight into questions such as when forks and teaware first became common in the state. Priority should be given to sites that contain such deposits, and to extracting all the available data from them when they are found. Plowzone and other generalized midden deposits that were laid down over decades are much less useful for research into rapid social changes. Most of the research historians have done on eighteenth-century material culture has been based on probate inventories, and more needs to be done to integrate archaeological data with this material. Probate inventories list many objects that do not survive in the ground, such as clothing and wooden furniture, but they also seem to omit many objects; for example, Lorena Walsh (1992) has found that by 1800 about

half of the probate inventories in Maryland list tea-making equipment, but archaeologists have found teacups on almost every site from this period that they have examined.

Our study of consumer choice has raised one of the questions most fundamental in the study of human behavior: how much freedom do people have, or choose to use, and how much are their actions determined by their cultures and physical environments? Archaeological study of how individual families made their way through the thickets of culture change, racial division, economic growth and dislocation, and the political upheavals that brought the nation into being, can help us approach this most difficult of questions. Archaeologists have experimented with ways to quantify difference and similarity among sites (De Cunzo et al. 1992; Grettler et al. 1995; South 1977), and these experiments should be continued. We should compare differences based on race and social class with differences among people within groups, attempting to sort out the various influences on what people bought and, more generally, how they lived. We should not, however, lose sight of the unique aspects of the sites we excavate, since every site reflects a family's particular history, and many components of human behavior cannot be expressed in numbers.

G. SUMMING UP

As this report was being written, highway construction crews were busy cutting a trench 30 feet deep and 300 feet wide across the McKean/Cochran Farm. The site is gone, but the record of the past that it contained has been preserved. Through this report, through the newspaper accounts, through the artifact collections from the site, and in the memories of the people, both professionals and students, who worked on it, the McKean/Cochran Farm can still shape our understanding of the past. We can build our future without destroying our history.

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GLOSSARY

archaeology	The study of past human culture through the systematic recovery and analysis of the artifacts/material evidence they left behind.
archival research	Research conducted in places where public or historical records, charters, and documents are stored and preserved.
argillite	A metamorphosed mudstone cemented by silica and lacking slaty cleavage. Used by prehistoric peoples to make stone tools. Found in New Jersey and Pennsylvania but not native to Delaware.
artifact	Any object shaped or modified and produced by humans, or as a result of human activity. A stone tool, a house, and a four-lane highway could all be considered artifacts.
assemblage	Collection of persons or things: in archaeology, the collection of artifacts from a particular site, from a stratigraphic level or cultural component within the site, or of a particular artifact class, such as lithics or ceramics.
bay	A subdivision of a building as seen from the front. A Georgian house with a door in the center of the facade and two pairs of windows on each side is said to have five bays.
biface	A stone tool bearing flake scars on both faces.
broad glass	Also called cylinder glass; window panes formed from a flattened glass cylinder.
butchery waste	Bone thrown away during the butchering of the animal carcass; parts not used for food.
Census, U.S.	An official count of the nation's population taken every ten years, often including a collection of demographic information.
chert	A fine-grained, siliceous, sedimentary rock, generally light-colored; an impure variety of chalcedony, resembling flint. Common in eastern North America and often used by prehistoric peoples to make stone tools.
chronology	Pertains to the basic temporal units of prehistory and the time span reflected in archaeological site stratigraphy.

cortex — Natural rind or weathered outer layer on flint-like materials; observations of cortex provide information on tool manufacturing techniques and methods of raw material procurement; presence of cortex indicates early- to middle-stage stool manufacturing activity.

creamware — A cream-colored ceramic used to make plates and other dishes, introduced by Josiah Wedgwood in 1762 and common until 1800.

cripple — Historical term meaning wetland or marshland.

cross section — A transverse of a portion of a feature, horizontally and vertically removing soil from one section.

crown glass — Window panes formed from a disk of hand-blown glass.

culture — A uniquely human system of behavioral patterns, beliefs, habits, and customs acquired by man through a nonbiological, uninherited process, learned by his society.

datum — A point, line, or surface used as a reference, as in surveying.

debitage — Residual lithic material resulting from tool manufacture; represents intentional and unintentional breakage of artifacts through either manufacture or function; debitage flakes may represent the various stages of progress of the raw material from the original form to the finished tool.

demography — The study of the characteristics of human populations, such as size, density, distribution, growth, and vital statistics.

diagnostic — An artifact that can clearly be dated and/or identified as to maker, date, place of origin, etc., thus serving as supporting evidence.

dietary refuse — Bone that comes from the table; food scraps.

ethnobotany — The analysis and interpretation of plant lore and agricultural customs of a people.

extant — Still in existence.

fallow field — A plowed field left unseeded for a growing season.

faunal remains — Animal remains, including both bone and shell.

feature — Any soil disturbance or discoloration that reflects human activity, or an artifact that is too large to be removed from a site and is just recorded–for example, a house or a storage pit.

floral remains — Includes both charred and uncharred plant materials such as seeds, nuts, shells, and wood.

flotation — The process of sifting soil samples through a fine screen while running a steady stream of water over the sample; residual materials such as tiny artifacts, seeds, and bones are separated out into light and heavy fractions for analysis.

Georgian — An architectural style based on Italian Renaissance models common in Britain and British America in the eighteenth century. Georgian houses were symmetrical, with central doorways that opened into halls or reception areas, not directly into the main room, as in a traditional British house.

granary — A storage building for threshed grain.

grid — The two-dimensional intersection network defining the squares in which archaeologists excavate.

historic — The time period after the appearance of written records. In the United States this generally refers to approximately AD 1600, the period after the beginning of European settlement.

historical archaeology — The archaeology of the period from initial European settlement to today.

hundred — A historic term representing the administrative division of some American and English counties.

indentured — A contract binding a person to work for another for a specified period of time in return for payment of travel and maintenance expenses.

in situ — In the original place.

intersite — Between sites; often used in the context of comparison.

intestate — A person who dies without a will.

intrasite — Within a site.

intrasite patterning Horizontal and vertical site structure; focuses on the delineation of task-specific activity areas and site formation processes.

jasper An opaque cryptocrystalline quartz of a variety of colors, usually yellowish brown to reddish brown, often used by prehistoric peoples to make stone tools.

lithic Of, related to, or made of stone.

loam A loose, fertile soil composed of a mixture of silt, clay, and sand containing organic matter.

locus A defined archaeological site or testing location.

marsh A tract of soft, wet land usually characterized by grasses, cattails, and related vegetation, often forming a transition zone between water and land.

material culture That segment of the physical environment which is purposely shaped by humans.

Mean Ceramic Date (MCD) A date obtained from the study of historic ceramics recovered from a site that approximates the median date of the site or deposit.

Minimum Number of Vessels (MNV) The smallest number of ceramic or glass vessels that could have produced the sherds from an archaeological assemblage.

Minimum Number of Units (MNU) The smallest number of bones (such as ribs or skulls) that could have produced the bone fragments found on an archaeological site, or in one context.

mitigation In archaeology, refers to minimizing the destruction or disturbance of an archaeological site by a construction project, erosion, farming practices, etc., through excavation of the site and systematic recovery of the artifacts or other representative material of past life.

Munsell Notation System A standard means of describing all color gradations along scales of value, hue, and color. Archaeologists use this system in describing and standardizing soil color descriptions. The Munsell system is usually used in association with a description of soil type.

Orphans' Court Records — The county court responsible for the welfare of orphans when a father died without a will. The Orphans' Court watched over the estate until the children (if any) reached majority. A guardian appointed by the court was to make periodic returns of the estate to the court. When the youngest heir came of age, the property could be divided among the heirs. These court records are filled with information regarding income property, education, repairs of houses and outbuildings, contracts, and other useful material about eighteenth- and nineteenth-century life. Spelling variations of Orphans' Court include "Orphans Court" and "Orphan's Court."

outbuilding — A building other than the principal building on a property–for example, on an eighteenth- or nineteenth-century farm: smokehouses, dairies, stables, and corncribs were typical outbuildings.

pearlware — A refined, nearly white ceramic used for plates, teacups, and other dishes, introduced by Josiah Wedgwood in about 1775 and common until about 1830.

perch — A measure of distance and acreage used by early surveyors, equal to 16.5 feet. Also called a pole, rod, or rood.

Phase I — The first stage of archaeological fieldwork, the objective of which is simply to find out whether sites are present.

Phase II — The second stage of archaeological fieldwork, in which sites are further investigated to determine their boundaries and how intact they are.

Phase III — The final stage of archaeological fieldwork, also called Data Recovery. Usually involves intensive archaeological and historical investigations to recover detailed information about the site.

plowzone — That part of the soil which has been repeatedly disturbed by plowing, usually the top eight to ten inches.

porringer — A small-handled vessel from which soups or stews are eaten.

posthole — A hole dug in the ground into which a post is placed.

post mold — The organic stain in the ground which is left by a decayed wooden post. A postmold stain may occur inside a posthole stain on a site.

probate — The judicial certification of the authenticity or validity of a will.

processing waste	Bone which is thrown away after it has been used to make food, such as cow skulls used for making head cheese.
profile	A side view of a feature or test unit.
quartz	Crystalline, nonmetallic, mineral consisting of silicon dioxide; typically occurs in hexagonal crystals or crystalline masses. Used by prehistoric peoples to make stone tools.
research design	A strategy developed at the beginning of a project to guide the research.
rhyolite	A light-colored, extrusive, igneous rock with abundant quartz and a very fine-grained texture. Used by prehistoric peoples to make stone tools.
sediment	Soil deposited by wind, water, or glaciers.
settlement pattern	The distribution of archaeological sites from one period across the landscape. Study of settlement patterns tells us what kind of environments people lived in and can help us understand both the environmental and social factors that influenced where they lived.
sherd	A piece of broken pottery or glass.
sloop	A sailboat that is single masted and fore and aft rigged with a short standing bowsprit or none at all.
socioeconomic	Applies to the interrelationship between economic wealth (or poverty) and social position or status.
soil horizon	Soils are divided into three horizons, which reflect different kinds of chemical and physical processes that have resulted from changing climatic conditions.
stratigraphy	The origin, composition, and succession of natural soil or rock or cultural layers.
stratum	(1) a mass of sedimentary deposits lying in a vertical sequence, and (2) a layer in which archaeological material (such as artifacts or dwelling remains) is found within a site.
subsistence	A source or means of obtaining those materials essential to the maintenance of life, such as food and shelter; in archaeology, subsistence deals primarily with dietary composition and food-procurement strategies.

subsoil	Sterile, naturally occurring soils not changed by human occupation.
subsurface	Below the surface; not visible from the surface.
sundry	Various; miscellaneous small articles or items.
terminus post quem (TPQ)	The "date after which" an archaeological stratum or feature's fill was deposited based on the date of the most recent artifact found in the stratum or fill.
Total Number of Fragments (TNF)	Number of bone fragments found on an archaeological site, or in one context.
uniface	A stone tool flaked on one surface only.
vessel	A container, such as a bowl, bottle, plate, or jar. Archaeologists conventionally refer to all the glass and ceramic household objects they find as "vessels." See also *Minimum Number of Vessels.*

PROJECT PERSONNEL

John A. Hotopp, Project Manager

Director and Principal Archaeologist, Louis Berger & Associates, Inc. B.A. in Economics and Political Science, Morris Harvey College. M.A. in Political Science, Marshall University. Ph.D. in Anthropology, University of Iowa. Twenty-four years of experience in archaeological research and administration.

Charles H. LeeDecker, Project Manager

Senior Archaeologist, Louis Berger & Associates, Inc. B.A. in Anthropology, Cornell University. M.A. in Anthropology, The George Washington University. Twenty-one years of experience in archaeological research in the Middle Atlantic and Southeast.

John Bedell, Principal Investigator, Historian

B.A. in History, Yale University. M.A. in History, Indiana University. Ph.D. in History, University of Minnesota. Ten years of experience in archaeological and historical research in the Middle Atlantic.

Lisa Adams, Field Crew

B.S. in Geography, University of Wisconsin. M.A. candidate at Eastern New Mexico University. Twelve years of experience in archaeology.

Rubi Arquiza, Laboratory Technician, Material Specialist

B.S. in Business Administration, Bloomfield College. Over five years of experience in processing, analysis, data recording and manipulation, and curation of archaeological artifacts.

Ayubu Azizi, Laboratory Technician

Six years of experience in laboratory processing of archaeological collections.

Sharla C. Azizi, Laboratory Supervisor

B.F.A. candidate, University of Houston. Thirteen years of experience in archaeology.

Charles Bedall, Field Crew

B.S. in Anthropology/Archaeology, James Madison University. Four years of experience in archaeological survey, excavation, and laboratory analysis.

Bruce Bourcy, Field Crew

B.A. in Anthropology, State University of New York, Oswego.

Teresa Brannon, Field Crew

B.A. in Anthropology, State University of New York, Albany. Eight years of experience in archaeological survey and excavation.

Joelle A. Browning, Field Crew

Six years of experience in archaeological survey, excavation, and laboratory analysis.

Kimber Budrow, Field Crew

Majored in Philosophy, State University of New York, Buffalo. Retired from U.S. Army with 24 years of service. Ten years of experience in archaeological research, including survey and excavation on prehistoric and historic sites.

Robert Clarke, Field Crew

B.A. in History, James Madison University. Over 10 years of experience in archaeological field and laboratory work, at technician and supervisory levels.

Andrea Denight, Field Crew

Three years of experience in archaeological survey and excavation.

Charles Dunton, Logistical Coordinator

B.S. candidate at Texas Southern University. Nine years of experience in archaeology.

Jennie Feinen, Field Crew

Over six years of experience in archaeological survey, excavation, and laboratory analysis.

Ronald Feinen, Field Crew

B.A. in Anthropology, State University of New York, Fredonia. Two years of experience in archaeological survey and excavation.

Stephanie R. Feingold, Laboratory Technician

B.A. in History and Environmental Studies, University of Pennsylvania. One year of experience in archaeological laboratory analysis.

Stephen Fisher, Computer Programmer

B.S. in Management Information Science, Seton Hall University. Five years of experience in archaeological applications of computer database design and management.

Kevin C.P. Fitzpatrick, Field Crew

B.A. in Anthropology with certificate in Applied Archaeology. Five years of experience in archaeological survey and excavation.

Rowan Flad, Field Crew

B.A. in Anthropology, University of Chicago. Two years of experience in archaeological survey and excavation.

Amy Freyberger, Field Crew

B.A. in Anthropology, Upsala College. Two years of experience in archaeological survey and excavation.

Leslie Frucht, Historian

B.A. in Geography, University of Delaware. M.A. in Urban Affairs and Public Policy, College of Urban Affairs and Public Policy, University of Delaware. Eight years of experience in preservation and in research in history and architectural history.

Linda Fulcher, Editor

B.A. in History, Rutgers University. Two years of experience in the editing and production of cultural resource management reports.

David Gilmour, Field Crew

B.A. in Anthropology, University of Maine, Orono. Six years of experience in archaeological survey and excavation.

Mallory Gordon, Material Specialist

B.A. in Anthropology, State University of New York at Binghamton. M.A. coursework in Anthropology/Museum Studies, George Washington University, Washington, D.C. Twenty years of experience in archaeological research and curatorial work.

Jack Goudsward, Logistical Coordinator

B.A. in Sociology-Anthropology, William Paterson College. Over 10 years of experience in archaeological survey, excavation, and laboratory analysis.

Adam Hellegers, Laboratory Technician

B.A. in Communications and Urban History, University of Pennsylvania. One year of experience in archaeological laboratory analysis.

Jody Holmes, Material Specialist

B.A. in Anthropology, Kenyon College. Williamsport Area Community College, Drafting. North Carolina Central University, Chemistry. Nineteen years of experience in archaeological survey and excavation, and eight years of experience in artifact analysis, the creation of research databases, and the production of NPS-ANCS data sets.

Jacqueline Horsford, Drafting Supervisor

B.S. in Geography, Pennsylvania State University. Six years of experience in drafting and cartography.

Robert Jacoby, Field Director, Field Laboratory Supervisor

B.A. in Anthropology, Northwestern University. Ph.D. candidate in Anthropology at State University of New York-Binghamton. Fifteen years of experience in archaeological survey and excavation.

Jason Janowitz, Laboratory Technician

Two years of experience in laboratory processing of archaeological collections.

Meta Janowitz, Senior Material Specialist

B.A. in Archaeology, Beloit College. M.Phil., City University of New York. Ph.D. in Anthropology, City University of New York. Twenty-two years of experience in archaeology.

Scott Jones, Field Crew

B.A. in Anthropology, Auburn University. Five years of experience in archaeology.

Erik Jonsberg, Laboratory Technician

B.A. in Anthropology, University of Massachusetts. Three years of experience in archaeological survey, excavation, and laboratory analysis.

Suzanne Kahn, Assistant Laboratory Supervisor

B.A. in Anthropology, Franklin and Marshall College. M.A. candidate in Anthropology, Catholic University of America. Eleven years of experience in archaeological survey, excavation, and laboratory analysis in the Middle Atlantic.

John Killeen, Material Specialist

B.A. in Anthropology/Archaeology, Hunter College, City University of New York. M.A. in Anthropology/Archaeology, Hunter College, City University of New York. Ph.D. candidate, Anthropology/Archaeology, The Graduate School, City University of New York. Extensive experience in archaeological survey, excavation, and laboratory analysis in the Southeast and Middle Atlantic, and in England and Ireland.

Barba Kutzner, Draftsperson

Associate Degree, Construction Drafting, Phoenix College. Over seven years of experience as a structural designer/drafter, residential designer, and facilities drafter.

Joshua Lasco, Photographic Assistant, Photographer

B.A. program in English, Seton Hall University. Six years of experience in processing, printing, and archiving photographic materials.

Linda Lipka, Drafting

DuCret School of Fine and Industrial Arts. Fifteen years of professional experience in graphic arts.

Ludomir Lozny, Laboratory Technician, Material Specialist

M.A. in Archaeology, Warsaw University. Ph.D. program in Archaeology at the City University of New York. Over 20 years of experience in archaeological survey, excavation, laboratory analysis, research, and teaching, focusing on prehistoric and historic sites in North America and Europe.

Magdalena Lozny, Laboratory Technician

M.A. in Archaeology, Warsaw University. Over 12 years of experience in archaeological fieldwork and laboratory analysis.

Nadia Maczaj, Assistant Laboratory Supervisor, Material Specialist

B.A. in History, Rutgers University. Seven years of experience in archaeology.

Christopher Marshall, Field Crew

B.A. in Anthropology/Archaeology, James Madison University. Over two years of experience in archaeological survey, excavation, and laboratory work.

Christy Roper Morganstein, Assistant Material Specialist

B.A. in Anthropology and Archaeology, Rutgers University. Over four years of experience in archaeological survey, excavation, and laboratory work.

Margaret Nash, Field Crew

Currently in undergraduate program in Anthropology at James Madison University. Six months of experience in archaeological fieldwork.

Lee Nicoletti, Production Supervisor

Business Administration at Bloomfield College. Eleven years of experience in technical report production.

Veronica Noselli, Technical Editor

B.A. in English, Syracuse University. Two years of editing experience.

Alex Ortiz, Laboratory Technician, Research Analyst

A.A. in Mathematics, Minor in Industrial Engineering, Central America University "Jose Simeon Canas", San Salvador, El Salvador, Central America. Nine years of experience in laboratory analysis and computerized analysis of artifact data.

Suzan Percy, Laboratory Technician

One year of experience in archaeological laboratory analysis.

Kim Pokorosky, Field Crew

B.A. in Anthropology, University of Akron. Four years of experience in archaeological survey, excavation, and laboratory analysis.

Earl Proper, Field Director, Crew Chief

B.A. in Business Administration, Lenoir-Rhyne College. Seven years of experience in archaeology.

James Quinn, Field Crew

B.A. in Archaeology, Hunter College, City University of New York.

Geun-Bai John Ra, Laboratory Technician

B.A. in Anthropology, Rutgers University.

Diane Rog, Field Crew

B.A. in Anthropology, Youngstown State University. M.A. degree candidate in Art History, Kent State University. Over one year of experience in archaeological survey, excavation, and laboratory work.

Jeffrey Rog, Field Crew

B.A. in Fine Arts, Kent State University. One year of experience in archaeological survey and excavation.

Rhea Rogers, Senior Prehistoric Material Specialist

B.A. in History, Wake Forest University, Winston-Salem, North Carolina. M.A. in Anthropology, Wake Forest University, Winston-Salem, North Carolina. Ph.D. in Anthropology, the University of North Carolina at Chapel Hill. Eleven years of experience in archaeological survey and excavation and in the processing and analysis of recovered archaeological remains.

Laurie Rudder, Field Crew

B.A. in Anthropology, University of Virginia. Over two years of experience in archaeological survey, excavation, and laboratory work.

Gerard Scharfenberger, Laboratory Technician

Over two years of experience in archaeological field and laboratory work.

Robert Shaw, Laboratory Technician

B.A. in Anthropology and History, Newark College of Arts and Sciences, Rutgers University. One year of experience in laboratory processing of archaeological collections.

Jason Shields, Field Crew

B.A. in Anthropology and International Studies, American University. Four years of experience in archaeological survey, excavation, and laboratory work.

Byron Simmons, Laboratory Technician, Material Specialist

Seven years of experience in the laboratory processing of archaeological collections.

Catherine Skocik, Field Crew
Over five years of experience in archaeology.

James Skocik, Field Crew
Over four years of experience in archaeology.

Barbara Slicner, Laboratory Technician
B.A. in Archaeology, University of Wroclaw. Eight years of experience in archaeological fieldwork and laboratory analysis.

Paul Stansfield, Field Crew
B.A. in Anthropology, Rutgers University. Three years of experience in archaeological fieldwork.

Rebecca Sterling, Field Crew
B.A. in Sociology/Anthropology and B.A. in Psychology, University of Akron. Over seven years of experience in archaeology on historic and prehistoric sites, in the field and laboratory.

Suzanne Szanto, Technical Editor
B.A. in English, Albertus Magnus College. Eleven years of experience in the editing and production of cultural resource management reports.

Rob Tucher, Senior Photographer
B.A. in Communications, Rutgers University. Fifteen years of experience in professional photography of archaeological subjects.

Lee Weber, Field Crew
B.A. in Sociology and Anthropology, Gettysburg College. Over six years of experience in archaeological survey, excavation, and laboratory work.

Caroline Van Dyke, Production Assistant
B.A. in Political Science, Seton Hall University. Experience in artifact analysis and cataloging, administration, public contact, editing, and report production.

Sue Wong, Laboratory Technician
Over three years of experience as an archaeological excavator and laboratory technician, on urban historic sites and in cemetery investigations.

Ingrid Wuebber, Historian, Senior Research Historian
B.A. in Archaeology, Douglass College, Rutgers University. Twelve years of experience in archaeology and historical research.

APPENDIX A

PUBLIC HANDOUT

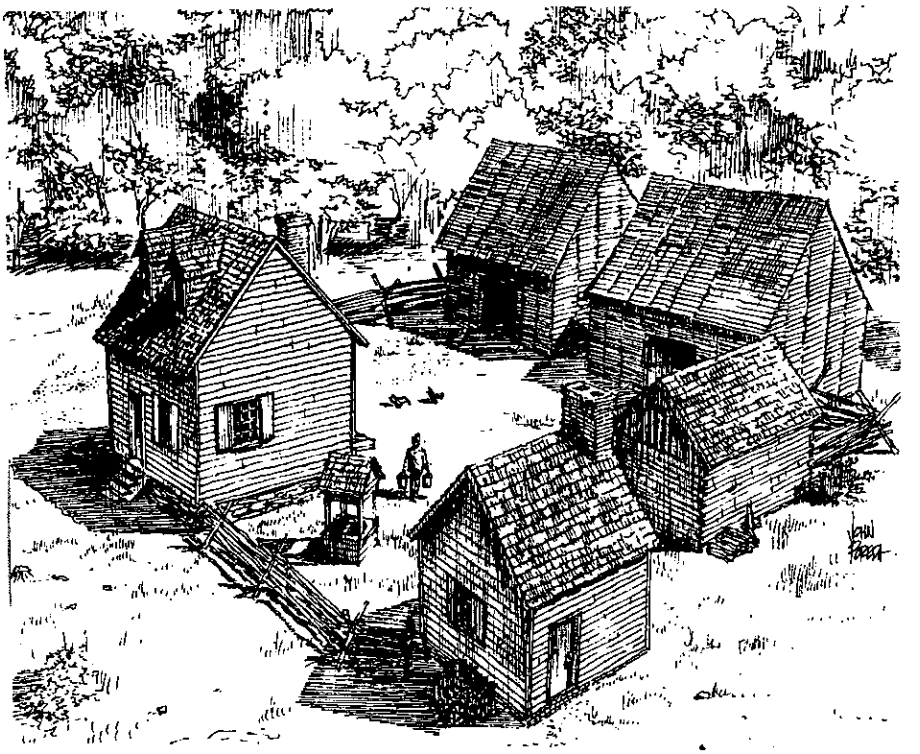
A PLANTATION ON THE APPOQUINIMINK

Excavations at the McKean/Cochran Farm

The Delaware Department of Transportation and Louis Berger & Associates

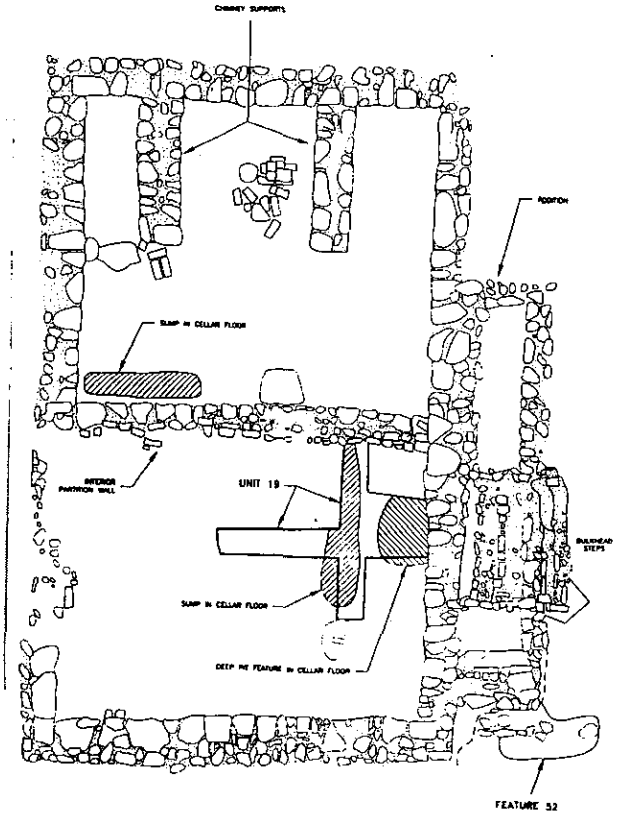
The McKean/Cochran Farm site was part of a 400-acre farm on the north bank of the Appoquinimink River just west of Odessa, Delaware. The site was discovered during an archaeological survey of the route of SR 1, the new highway that will carry traffic from northern Delaware and I-95 to the Atlantic beaches. During the excavation of the site, which was carried out in the summer of 1996, the foundations of several buildings were uncovered and more than 30,000 artifacts were found. The finds can tell us a great deal about life in Delaware at the time of the American Revolution.

The first house was built on the site about 1770. Like most American houses in the colonial period, it was small, about 15 by 18 feet, with a single room on the ground floor. The house was wooden, with stone foundations, and it had a full basement. It was heated by a single fireplace on the ground floor. The upstairs, probably a simple attic, was unheated. The single ground-floor room served the family who lived there for eating, visiting, working, and, in the winter, sleeping. At that time the site belonged to two children, Thomas and Letitia McKean, who had inherited it from their grandmother, so the people living in the house were probably tenants. The tenants' farm also included two barns, a separate kitchen), a well, and a smokehouse.



The McKean/Cochran Farm about 1800

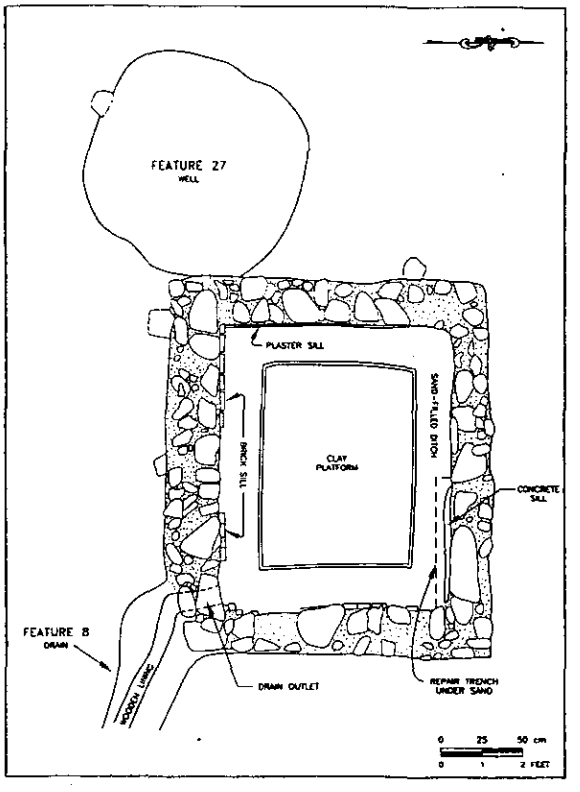
By 1810 Letitia McKean Clark, then a widow, was living at the farm. Letitia was from a very wealthy and prominent family. Letitia's relations were mostly Scotch-Irish, but through one of her grandmothers she was descended from the Dutch and Swedish immigrants who settled on the Appoquinimink in the 1650s. The inventory of her father's estate mentions silver spoons and a mahogany writing desk, and bills submitted to the estate show that Letitia took lessons from an arithmetic tutor and a dancing master. Letitia's uncle, Thomas McKean, was one of Delaware's signers of the Declaration of Independence and later became governor of Pennsylvania. In keeping with her status, Letitia built a new, bigger house on the site. Still, the house was not large by modern standards. It measured 16 by 26 feet, with a basement and a full second story. Thousands of pieces of window glass were found in the cellar, showing that the house had many windows. The house probably had two rooms on the ground floor. The house only had one chimney, so only one of the rooms was heated. Even the wealthy people of the 1700s lacked many things we take for granted, such as heated bedrooms and window screens to keep out mosquitos.



Plan of the Foundation of the Later House

Letitia died in 1814, and the farm was sold at auction. The buyer was Robert Cochran, a member of a numerous and important Delaware family. Robert and his sons lived in Letitia's house until about 1830, when they built a new, even larger and grander house elsewhere on the property. The move to the new house shows two things. First, standards of living continued to rise, so the house that had seemed new and grand to Letitia McKean in 1800 was no longer adequate for a family of similar wealth thirty years later. Second, the site of the house was moved from near the river, which had been the main means of transportation in colonial times, closer to the road. When the house was abandoned the cellar hole was filled in with trash, and more than 15,000 artifacts were found there. These included many kinds of ceramics, such as Chinese porcelain tea bowls, coarse earthenware milk pans and jars, Creamware and Pearlware plates, a stoneware ink bottle, and "petalled" bowls made in Philadelphia. Bones found in the cellar show that the residents ate raccoons, turtles, and several kinds of fish, as well as beef and pork. Gun parts and a jacket button from a Continental Army uniform suggest that one of the residents had fought in the Revolution. The most mysterious object found in the cellar was a single canon ball; perhaps it was another souvenir of the Revolution.

The most interesting building found on the site was a dairy, which was probably built around 1800. The dairy, a building for making butter and cheese, was an important part of traditional culture in much of northern Europe. Butter and cheese were important parts of the European diet, and the technology for making them was well-developed. In Scotland and much of Germany the preferred form for the dairy building was the spring house, a stone structure built directly over a spring or stream, so that the milk could be cooled in the flowing water. Spring houses were very common in Pennsylvania and northern Delaware, where springs and small streams are plentiful. So when the occupants of the McKean/Cochran farm decided to build a dairy, they built it in the way they knew, as a spring house. However, they were not in Scotland or Pennsylvania, but in the flat lands of the Delaware coastal plain, and there was no spring on the site. The water to cool the milk must have come from the adjacent well. This building represents, therefore, a traditional technology used in an environment for which it was completely unsuited. Rather than adapt to the world in which they found themselves, the residents tried to live in the way they knew.



Plan of the Dairy Foundations

APPENDIX B

ARTIFACT TABLES

I. OVERALL CLASS AND GROUP DISTRIBUTION

Table B.1. Artifact Pattern Analysis, McKean/Cochran Farm Site

ARTIFACT GROUP/CLASS	COUNT	PERCENTAGE
KITCHEN		
Ceramics	13,522	47.9%
Bottles	1,914	6.8%
Tumblers/Wine Glasses	200	0.7%
Kitchenware (other utensils, bowls, pots, etc.)	30	0.1%
Misc. Glassware	20	0.1%
Tableware	38	0.1%
Kitchen - Other	460	1.6%
Kitchen Subtotal	16,184	57.3%
ARCHITECTURAL		
Window Glass	5,830	20.6%
Nails, Spikes, etc.	5,604	19.8%
Door Parts	16	0.1%
Electrical Related	1	0.0%
Plumbing Fixtures	1	0.0%
Architectural Subtotal	11,452	40.5%
FURNISHINGS		
Lighting Related	3	0.0%
Furniture Hardware and Pieces	12	0.0%
Furniture - Decorative	2	0.0%
Furniture - Other	3	0.0%
Furnishings Subtotal	20	0.1%
ARMS		
Ammunition	4	0.0%
Gunflints	3	0.0%
Arms Subtotal	7	0.0%
CLOTHING		
Clothing Fasteners	125	0.4%
Shoe Buckles	12	0.0%
Belts, Straps, Etc,	3	0.0%
Clothing Subtotal	140	0.5%
PERSONAL		
Coins	7	0.0%
Keys	6	0.0%
Jewelry	3	0.0%
Hygiene/Personal Care	61	0.2%
Pharmaceutical/Medicine	1	0.0%
Tobacco Pipes	624	2.2%
Personal - Other	8	0.0%
Personal Subtotal	710	2.5%

Table B.1 (continued)

ARTIFACT GROUP/CLASS	COUNT	PERCENTAGE
ACTIVITIES		
Toys	6	0.0%
Writing Related	2	0.0%
Hand Tools	16	0.1%
Farm Tools	4	0.0%
Sewing Related	25	0.1%
Livestock/Pet Related	21	0.1%
Musical	3	0.0%
Barrel Parts	15	0.1%
Activities, Other	354	1.3%
Activities Subtotal	446	1.6%
SITE TOTAL*	28,249	100.0%

* Does not include twentieth-century artifacts (3), faunal/floral material (9,134), unidentified (518), or miscellaneous building material (105)

II. TABLES FOR VESSEL COMPARISON BETWEEN CHESAPEAKE AND DELAWARE VALLEY SITES

Table B.2. Ceramic Vessels from Selected Chesapeake Sites

				John	Oxon Hill		Oxon Hill Well		Shirley	Kingsmill
		Pettus	Utopia	Hicks	Bray	F. 5000	Str. A	Str. B-C	Root Cellar	Quarter
Teawares	Cup	-	-	15	13	1	15	12	34	20
	Saucer	-	-	11	-	-	7	7	9	10
	Teapot	-	-	4	-	-	1	-	-	5
	Misc.	-	-	1	-	-	-	-	-	1
Tablewares	Plate	51	6	15	15	3	27	5	104	29
	Dish	8	-	15	1	-	-	-	-	9
	Bowl	59	8	28	26	17	19	3	24	26
	Pitcher	-	-	3	-	-	1	-	-	
	Porringer	1	1	-	1	-	-	-	-	3
	Platter	-	-	2	-	-	-	-	-	2
	Sauceboat	-	-	-	-	-	1	-	-	1
	Condiment dish	-	-	-	-	-	-	1	-	1
	Salt	2	-	-	-	-	-	-	-	1
	Misc.	-	-	-	-	-	6	8	12	1
Non-Tea	Mug	20	9	51	15	1	7	10	14	18
Drinking	Cup	3	2	42	-	-	4	4	-	-
	Bottle	44	2	7	2	-	1	-	-	1
	Punch bowl	-	-	-	-	-	-	-	-	5
Storage	Jar	90	17	-	8	4	23	7	8	9
	Pot	-	4	23	-	-	-	-	-	-
	Butter pot	4	1	-	-	-	-	-	-	-
Food	Milk pan	-	-	30	-	3	4	4	4	-
Preparation	Colander	1	-	-	-	-	-	-	-	-
	Pipkin	6	-	1	-	-	-	-	-	5
	Cooking pot	-	-	1	1	-	-	-	6	1
	Patty pan	-	-	-	5	-	-	-	-	1
Multi-	Dish	-	-	-	-	-	-	-	-	-
function	Pan	31	7	6	12	-	-	-	-	8
	Jug	12	1	5	5	-	-	-	-	-
	Bowl	-	-	8	-	-	7	3	-	-
Sanitary	Chamber pot	-	-	1	6	-	-	1	9	11
	Ointment pot	11	-	5	-	-	-	10	4	9
	Drug jar	-	-	1	-	-	-	2	-	-
	Bleeding bowl	-	-	2	-	-	-	-	-	-
Other	Figurine	-	-	-	-	-	-	-	2	-
Unidentified	Hollow	-	1	-	5	-	8	1	-	80
	Flat	-	-	-	1	-	-	-	-	-
	Unidentified	8	-	-	3	11	46	16	320	-
		352	60	277	119	40	178	94	550	186

Table B.2 (continued)

		North	Monticello				
		Quarter	Foundations	Slave Qtr. r	Slave Qtr. s	Slave Qtr. t	Stewart/Watkins
Teawares	Cup	26	25	5	51	18	25
	Saucer	13	13	7	31	39	23
	Teapot	3	2	-	1	-	3
	Creamer	-	-	-	1	-	2
	Misc.	-	1	-	-	3	-
Tablewares	Plate	19	27	15	77	70	27
	Dish	4	-	-	8	7	1
	Bowl	13	3	4	17	7	3
	Pitcher	-	3	-	-	2	-
	Porringer	1	-	-	1	-	-
	Platter	-	3	1	6	7	2
	Tureen	1	-	-	2	-	-
	Misc.	-	1	-	2	2	1
	Jelly mold	-	1	-	-	-	-
	Mustard jar	-	-	-	-	1	-
	Custard cup	-	-	-	-	-	1
Non-Tea	Mug	13	5	1	16	21	6
Drinking	Cup	-	1	-	-	3	1
	Punch bowl	-	1	-	-	-	-
Storage	Jar	16	1	2	17	9	3
	Pot	-	-	1	3	9	-
	Butter pot	-	1	-	-	-	-
	Bottle	1	1	-	11	7	1
Food	Milk pan	-	-	-	1	1	-
Preparation	Colander	-	-	-	-	-	-
	Pipkin	2	-	-	-	-	-
Multi-	Dish	-	-	-	-	-	1
function	Pan	10	4	-	-	-	-
	Jug	3	-	1	1	-	1
	Bowl	-	-	-	-	-	-
Sanitary	Chamber pot	5	4	2	10	6	2
	Ointment pot	5	-	-	1	-	-
	Drug jar	-	-	-	-	-	-
Other	Candlestick	1	-	-	-	-	-
	Toy	-	-	-	1	-	-
	Darning egg	-	-	-	1	-	-
Unidentified	Hollow	1	20	-	43	62	15
	Flat	-	-	-	8	1	7
	Unidentified	-	10	-	-	-	-
		137	126	39	311	275	125

Table B.3. Ceramic Vessels from Selected Delaware Valley Sites

		John Powell	John Tyndall	Wm. Strickland	Charles Robinson	Old Swedes	Benj. Wynn	Whitten Road	Darrach Store
Teawares	Cup	-	5	19	58	11	32	37	23
	Saucer	-	11	10	52	6	32	12	5
	Teapot	-	-	3	46	4	9	5	2
	Creamer	-	-	-	-	-	-	-	1
	Misc.	-	-	1	-	-	-	-	8
	Cup/small bowl	-	-	-	-	-	-	18	-
Tablewares	Plate	7	10	26	36	17	25	21	33
	Dish	-	-	-	-	-	-	1	-
	Bowl	-	3	24	27	8	19	23	19
	Pitcher/tankard	-	2	16	-	-	-	-	-
	Pitcher	1	-	-	6	1	1	-	1
	Porringer	1	22	4		1	3	-	-
	Platter	-	-	3	4	-	3	-	-
	Jelly mold	-	-	-	1	-	-	-	-
	Misc.	-	-	-	-	-	2	2	2
Non-Tea	Mug	15	15	-	6	-	6	5	4
Drinking	Cup	5	4	10	-	-	-	10	-
	Mug/jug	-	-	25	-	-	-	-	-
	Tankard	-	-	-	2	-	-	-	-
Storage	Jar	8	11	4	34	-	11	32	1
	Pot	-	-	2	-	-	-	-	14
	Butter pot	-	-	11	-	-	-	1	-
	Bottle	1	1	-	1	-	-	-	
Food	Milk pan	7	-	23	5	11	6	1	2
Preparation	Colander	-	-	-	-	-	-	-	-
	Pipkin	-	-	-	-	1	-	-	-
	Cooking pot	-	-	-	-	-	-	-	2
Multi-	Dish	-	9	8	91	15	26	73	18
function	Pan	1	8	-	90	2	17	-	-
	Jug	4	-	-	9	-	6	-	4
	Bowl	3	12	15	54	3	21	13	22
	Bowl/pan	-	-	-	-	-	-	-	12
Sanitary	Chamber pot	-	-	9	6	6	1	9	2
	Ointment pot	1	1	4	-	-	-	-	-
	Drug jar	-	-	1	-	-	-	-	-
Other	Toy	-	-	1	-	-	-	-	-
Unidentified	Hollow	-	23	20	-	31	8	47	22
	Flat	-	-	-	-	4	-	6	-
	Unidentified	-	-	-	-	19	-	68	54
		54	174	237	528	140	229	384	251

Table B.4. Sites and References for Ceramics Comparisons

NAME	TYPE	DATE	LOCATION	REFERENCE
Pettus	Plantation	1660-1680	James City Co., Va.	Kelso 1984
Utopia	Tenant Farm	1680-1700	James City Co., Va.	Kelso 1984
John Hicks	Farm	1723-1743	St. Marys Co., Md.	Stone et al. 1973
Bray	Plantation	1720-1750	James City Co., Md.	Kelso 1984
Oxon Hill				
Feat. 5000	Plantation work area	1750-1800	Prince Georges Co., Md.	Garrow & Wheaton 1986
Well, Strat. B-C	Plantation work area	1750-1770	Prince Georges Co., Md.	Garrow & Wheaton 1986
Well, Strat. A	Plantation work area	1750-1840	Prince Georges Co., Md.	Garrow & Wheaton 1986
Kingsmill Quarter	Slave Quarter	1780-1800	James City Co., Va.	Kelso 1984
North Quarter	Slave Quarter	1780-1800	James City Co., Va.	Kelso 1984
Shirley Plantation				
Hill House	Plantation	1750-1830	Charles City Co., Va.	Reinhart 1984
Root Cellar	Plantation	1760-1830	Charles City Co., Va.	Reinhart 1984
Monticello				
Foundations	Plantation	1780-1830	Albemarle Co., Va.	Heath and Patten 1992
Monticello r	Slave House	1780-1830	Albemarle Co., Va.	Gruber 1990
Monticello s	Slave House	1780-1830	Albemarle Co., Va.	Gruber 1990
Monticello t	Slave House	1780-1830	Albemarle Co., Va.	Gruber 1990
Stewart/Watkins	Tenant House	1800-1810	Albemarle Co., Va.	Heath 1991
John Powell	Farm	1690-1735	Kent Co., Del.	Grettler et al. 1995
Carney Rose	Farm	1720-1740	Mercer Co., NJ	LBA 1986c
Wm. Strickland	Farm	1726-1764	Kent Co., Del.	Catts et al. 1995
Charles Robinson	Farm	1720-1776	New Castle Co., Del.	Thomas et al. 1994
Old Swedes	Town Parsonage	1757-1768	Wilmington, Del.	LeeDecker et al. 1990
Benjamin Wynn	Tenant Farm	1765-1822	New Castle Co., Del.	Grettler et al. 1996
Whitten Road	Tenant Farm	1760-1830	New Castle Co., Del.	Shaffer et al. 1988
Darrach Store	Tenant House	1775-1860	Kent Co., Del.	De Cunzo et al. 1992

III. DETAILED CERAMIC VESSEL TABLES

Table B.5. Feature Summary of Ceramic MNVs, by Percentage Complete

PERCENTAGE COMPLETE	FEATURE 1		FEATURE 4		FEATURE 29	
	N	%	N	%	N	%
0 - 10%	395	77	97	90	68	72
11 - 25%	69	13	7	6	13	14
26 - 50%	32	6	4	4	6	6
51 - 75%	10	2	-	-	5	5
76 - 99%	8	1.5	-	-	2	2
100%	3	.5	-	-	-	-
TOTAL	517		108		94	

Table B.6. Feature 4, Minimum Numbers of Vessels, Teawares and Tablewares

	TEAWARES		TABLEWARES				NON-TEA DRNK		
WARE TYPE	Cup	Saucer	Plate	Bowl	Porr-inger	Misc. Tblw	Mug	Misc. Drnk.	TOTAL
PORCELAIN									
Overglaze poly-chrome painted	1	1	-	-	-	-	-	-	2
Underglaze blue painted	2	5	-	-	-	-	-	-	7
Under and over-glaze painted	1	1	-	-	-	-	-	-	2
CREAMWARE									
Clouded	1	-	-	-	-	-	-	-	1
PEARLWARE									
Blue shell edge	-	-	1	-	-	-	-	-	1
FAIENCE									
White glaze	-	-	-	1	-	-	-	-	1
White glaze w/ blue decoration	-	-	-	7	-	1	-	-	8
White glaze w/ purple decoration	-	-	-	-	-	1	-	-	1
Blue glaze	-	-	-	1	-	-	-	-	1
Blue glaze w/ blue decoration	-	-	-	-	-	1	-	-	1
WHITE SALT-GLAZED STONEWARE									
Plain	-	-	-	-	-	2	-	-	2
BRITISH EARTHENWARE									
"Midlands Mottled"	-	-	-	-	-	-	1	1	2
BRITISH SLIPWARE									
Dot and combed	-	-	-	-	-	-	-	2	2
GRAY-BODIED STONEWARE									
Westerwald	-	-	-	-	-	-	-	6	6
RED-BODIED									
Brown glaze	-	-	-	-	1	-	-	-	1
Dark brown/black glaze	-	-	-	-	7	-	1	1	9
TOTAL	5	7	1	9	8	5	2	10	47

Table B.7. Feature 4, Minimum Numbers of Vessels, Other Functions

	STORAGE	PREPARATION		MULTIFUNCTION			SANITARY		
WARE TYPE	Jar	Milk Pan	Colander	Dish	Pan	Jug	Chamber Pot	Ointment Pot	TOTAL
FAIENCE									
White glaze	-	-	-	-	-	-	-	1	1
RED-BODIED									
Brown glaze	3	-	-	-	-	1	-	-	4
Brown glaze w/mottling	-	2	1	-	-	1	-	-	4
Dark brown/black glaze	2	3	-	-	-	2	2	-	9
Slip-trailed	-	-	-	2	5	-	-	-	7
Sgraffito decoration	-	-	-	2	-	-	-	-	2
Burned glaze	-	1	-	-	-	-	-	-	1
BRITISH EARTHENWARE									
North Devon sgraffito	-	-	-	1	-	-	-	-	1
TOTAL	5	6	1	5	5	4	2	1	29

Table B.8. Feature 29, Minimum Numbers of Vessels, Teawares and Tablewares

	TEAWARES				TABLEWARES				NON-TEA DRNK		
WARE TYPE	cup	saucer	teapot	plate	platter	bowl	porr-inger	misc tblw	mug	misc drnk	TOTAL
PORCELAIN											
Underglaze blue painted	3	5	-	-	-	-	-	-	-	-	8
Under and over-glaze painted	1	2	-	-	-	-	-	1	-	-	4
CREAMWARE											
Plain	1	1	-	-	-	-	-	-	-	-	2
Feather edge	-	-	-	-	1	-	-	-	-	-	1
Overglaze painted	1	-	-	-	-	-	-	-	-	-	1
Clouded	-	-	-	1	-	-	-	1	-	-	2
Embossed (?B)	-	1	1	-	-	-	-	-	-	-	2
Vegetable shape	-	-	-	-	-	-	-	1	-	-	1
Burned/unidentified	-	1	-	-	-	-	-	-	-	-	1
FAIENCE											
White glaze	-	-	-	-	-	1	-	-	-	-	1
White glaze w/ polychrome dec.	-	-	-	-	-	1	-	-	-	-	1
BRITISH EARTHENWARE											
"Midlands Mottled"	-	-	-	-	-	-	-	-	1	-	1
Slipware - dot	-	-	-	-	-	-	-	-	-	1	1
WHITE SALT GLAZED STONEWARE											
Plain	2	1	-	-	-	-	-	-	-	-	3
Slip-dipped	-	-	-	-	-	-	-	-	-	1	1
Molded dec.	-	-	-	-	1	-	-	-	-	-	1
Scratch blue	-	1	-	-	-	-	-	-	-	-	1
GRAY-BODIED STONEWARE											
Westerwald	-	-	-	-	-	-	-	-	-	2	2
Mottled Brown Slip	-	-	-	-	-	-	-	-	1	1	2
Nottingham Type	-	-	-	-	-	-	-	-	1	1	2
RED-BODIED											
Dark brown/black glaze	-	-	-	-	-	-	2	-	2	-	4
Slip-decorated	-	-	-	-	-	1	-	-	-	-	1
TOTAL	8	12	1	1	2	3	2	3	5	6	43

Table B.9. Feature 29, Minimum Numbers of Vessels, Other Functions

	STORAGE	PREPARATION		MULTIFUNCTION				SANITARY	
WARE TYPE	jar	milk pan	pipkin	dish	pan	jug	bowl	misc. multi	chamber pot	TOTAL
CREAMWARE										
Beaded	-	-	-	-	-	-	-	-	1	1
RED-BODIED										
Brown glaze	-	1	-	-	-	-	-	-	-	1
Brown glaze w/mottling	-	-	1	-	1	-	-	-	-	2
Dark brown/black glaze	4	8	-	-	1	1	-	2	-	16
Slip-trailed	-	-	-	5	4	-	-	-	-	9
Misc. slip decoration	-	-	-	-		-	2	-	-	2
BRITISH EARTHENWARE										
North Devon	1	-	-	-	1	-	-	-	-	2
TOTAL	5	9	1	5	7	1	2	2	1	33

Table B.10. Feature 1, Minimum Numbers of Vessels, Teawares and Tablewares

	TEAWARES				TABLEWARES						NON-TEA	
WARE TYPE	cup	saucer	teapot	misc. tea	plate	dish	bowl	pit-cher	porr-inger	misc table	mug	TOTAL
PORCELAIN												
Overglaze polychrome painted	19	24	1	7	-	-	3	-	-	-	-	54
Underglaze blue painted	10	12	-	1	-	-	3	-	-	-	-	26
Under and over-glaze painted	-	2	-	2	-	-	-	-	-	-	-	4
CREAMWARE												
Plain	3	2	1	-	30	-	4	1	-	1	1	43
Overglaze painted	2	2	4	-	-	-	1	-	-	-	-	9
Clouded	-	-	-	-	3	-	-	-	-	-	1	4
Embossed	2	1	1	-	-	-	1	-	-	1	1	7
Dipped	-	-	-	-	-	-	2	-	-	-	1	3
Other	-	-	-	-	-	-	-	1	-	-	-	1
PEARLWARE												
Blue painted	4	7	1	-	-	-	2	-	-	1	-	15
Polychrome painted	15	17	2	-	-	-	7	-	-	-	-	41
Brown painted	3	1	-	-	-	-	-	-	-	-	-	4
Green shell edge	-	-	-	-	18	-	-	-	-	1	-	19
Blue shell edge	-	-	-	-	19	-	-	-	-	1	-	20
Other shell edge	-	-	-	-	1	-	-	-	-	-	-	1
Dipped	-	-	-	-	-	-	2	1	-	-	-	3
YELLOWWARE/ *LOCAL* CREAMWARE												
Octagonal	-	-	-	-	5	-	-	-	-	1	-	6
Green shell edge	-	-	-	-	2	-	-	-	-	-	-	2
FAIENCE												
White glaze	-	-	-	-	-	-	1	-	-	-	-	1
White glaze w/ blue decoration	-	-	-	-	3	-	2	-	-	-	-	5
White glaze w/ polychrome dec.	1	1	-	-	-	-	1	-	-	-	-	3

Table B.10 (continued)

	TEAWARES				TABLEWARES						NON-TEA	
WARE TYPE	cup	saucer	teapot	misc. tea	plate	dish	bowl	pit-cher	porr-inger	misc table	mug	TOTAL
Blue glaze w/ blue decoration	-	-	-	-	1	1	-	-	-	-	-	2
WHITE SALT-GLAZED STONEWARE												
Plain	3	-	-	-	-	-	-	-	-	-	-	3
Molded/slip cast	-	-	-	-	7	-	-	-	-	-	-	7
Scratch blue	2	2	-	-	-	-	2	1	-	-	-	7
RED-BODIED												
Engine-turned	-	-	5	-	-	-	-	-	-	-	-	5
Brown glaze	-	-	-	-	-	-	3	-	-	-	5	8
Dark brown glaze	-	-	-	-	-	-	-	-	2	-	-	2
Black glaze	-	-	-	-	-	-	-	-	2	-	-	2
Brown glaze w/mottling	-	-	-	-	-	-	2	-	1	-	-	3
Slip-decorated	-	-	-	-	-	-	18	-	-	-	-	18
GRAY-BODIED STONEWARE												
Westerwald	-	-	-	-	-	-	-	-	-	-	3	3
Nottingham Type	-	-	-	-	-	-	-	-	-	1	3	4
Mottled brown slip	-	-	-	-	-	-	-	-	-	-	1	1
BRITISH SLIPWARE												
Dot & combed	-	-	-	-	-	-	-	-	-	-	1	1
Reverse colors	-	-	-	-	-	-	-	-	-	-	1	1
TOTAL	64	71	15	10	89	1	54	4	5	7	18	338

Table B.11. Feature 1, Minimum Numbers of Vessels, Other Functions

	STOR-AGE	PREPARATION			MULTIFUNCTION				SANI-TARY	HOUSEHOLD ACTIVITIES/ TOYS			
WARE TYPE	jar	milk pan	col-ander	dish	pan	jug	bowl	misc. multi.	chamber pot	ink	toy	whistle	TOTAL
CREAMWARE													
Plain	-	-	-	-	-	-	-	-	1	-	-	-	1
PEARLWARE													
Polychrome painted	-	-	-	-	-	-	-	-	-	-	-	1	1
RED-BODIED													
Brown glaze	2	6	-	-	-	2	-	1	-	-	-	-	11
Brown glaze w/mottling	4	4	1	-	-	-	-	1	-	-	-	-	10
Dark brown/black glaze	8	20	-	-	-	5	-	-	1	-	1	-	35
Slip-trailed	-	-	-	13	21	-	1	-	-	-	-	-	35
Misc. slip decoration	-	-	-	1	-	-	-	-	-	-	-	-	1
BRITISH EARTHENWARE													
Buckley	1	-	-	-	-	-	-	-	-	-	-	-	1
GRAY SALT-GLAZED													
Plain	-	-	-	-	-	-	-	-	-	1	-	-	1
TOTAL	15	30	1	14	21	7	1	2	2	1	1	1	96

The complete inventory of artifacts, faunal remains, and floral remains from the McKean/Cochran Farm Site is available from the following agencies:

Delaware Department of Transportation
Division of Planning
800 Bay Road
P.O. Box 778
Dover, Delaware 19903
Contact: Kevin Cunningham, Archaeologist
(302) 760-2125

Archaeology Laboratory
Louis Berger & Associates, Inc.
100 Halsted Street
East Orange, New Jersey 07019
Contact: Sharla Azizi, Laboratory Supervisor
(973) 678-1960

APPENDIX C

TECHNICAL FAUNAL REPORT

TECHNICAL FAUNAL REPORT

Introduction

The McKean/Cochran Farm Site yielded 9,529 bone fragments. The faunal assemblage was large and diversified in terms of the range of species represented. Bone was collected from several features as well as from the plowzone. The area is rich in wildlife resources, including mammal, bird, reptile, and fish species. The environment supports a wide range of species that have been exploited for food and other uses during prehistoric and historic times. Therefore, there was a high probability that the faunal record would include the remains of wild species, which would indicate the exploitation of environmental resources by the site's inhabitants over time. During historic times the site was a farm; thus, it was also expected that the faunal record would include the remains of domesticated livestock. Based on these expectations, it was further anticipated that a number of different types of deposits would be identified from which various activities, including dietary consumption practices, hunting, and fishing, could be inferred.

In the discussion that follows, two main units of measure are employed for the faunal assemblage. In describing the Stage 1-level features, the Total Number of Fragments (TNF) count is used, and for the Stage 2-level feature descriptions the Minimum Number of Units (MNU) count is used. The TNF count is always used in discussions of the frequencies of bone modifications, such as cut marks, gnaw marks, heat exposure, and weathering. The TNF count is simply the total number of bone fragments counted by species. This measure does not convey any information about the number of actual bones represented for a species.

The Minimum Number of Units measure is similar to the Number of Identified Specimens (NISP), which quantifies the number of skeletal elements identified for a given species (Grayson 1984; Lyman 1994). However, the MNU differs from the NISP in that it represents a set of types of bone identified by species or size-range category. Types of MNUs are distinguished in the set, such as articulated skeletons (Minimum Number of Individuals, or MNI), skeletal Elements (Minimum Number of Elements, or MNE), articulations or joints composed of skeletal elements (Minimum Number of Articulated Elements), butchered skeletal elements representing meat cuts (Minimum Number of Cuts, or MNC), and/or articulated or jointed meat cuts (Minimum Number of Articulated Cuts) (Azizi et al. 1996). The gross MNU reflects a tally of all types of skeletal material represented in a deposit.

Throughout the discussion the terms *dietary refuse*, *processing waste*, and *butchery waste* appear frequently. These terms are used to describe the nature and composition of the faunal materials recovered from the site. *Dietary refuse* is defined as the remains of animal species typically consumed by people and composed of skeletal elements representing edible parts of the body. Edible parts of the body include most of the postcranial skeletons of large domesticated mammal, bird, fish, and some reptile species. Figures C.1-C.4 (presented following the text for this appendix) provide a visual aid to understanding which parts of large domesticated mammals are considered

dietary materials and which are considered waste materials. The slaughtering and processing of large domesticated mammals, such as sheep, pig, and cattle, was fairly standard. The carcasses of cattle, pig, and sheep were first cut up into large meat sections, referred to here as "butcher cuts." These were then cut into smaller units, referred to here as "meat cuts." The figures illustrate butcher cuts and meat cuts for cattle (beef and veal), pig (pork), and sheep (mutton). For each species, the meat from different parts of the carcass varies in terms of quality and quantity. The ranking of meat cuts indicates the difference in quality, where 1 equals the best in quality and 10 the least in quality (Henry 1987; Huelsbeck 1991; Schmitt and Zeier 1993; Schultz and Gust 1983; Ubaldi and Grossman 1987).

Processing waste is defined as skeletal material that has been discarded during processing for organ meats and marrow extraction. It is often identified by butchered cranial bone from sheep, pig, and cattle, as well as foot bone, usually from calves. Pig's feet are always considered dietary refuse and not processing waste because they were, and continue to be, a commonly eaten food. A good example of processing waste is found in the bone refuse from making head cheese. Head cheese is a dish composed of the meat from calf's head that is bound with gelatin extracted from calf's feet. The processing waste appears as butchered skulls, mandibles, metapodia, and phalanges from immature cattle, or veal. Another example is the processing waste from extracting cattle, or beef, tongue. The processing waste in this case appears as butchered mandibles. There are other examples involving the extraction of the brains and tongues of sheep and pig, as well as waste that occurs from trimming off foot element from the shanks of sheep. In most instances, it is the presence of butchery marks that indicates whether or not these elements represent processing waste.

Butchery waste is defined as the residual, or discarded, skeletal material from the processing of a carcass, and usually consists of the head and feet. There is a certain degree of difficulty in distinguishing between on-site butchery and processing waste based on this definition. However, in general, butchery waste is identifiable when there is a fairly high frequency of head and foot elements in comparison to dietary materials from more than one individual of the same species, as well as head and foot elements from more than one species in the same deposit.

Table C.1 summarizes the faunal material according to the phase of the investigation and the type of unit of excavation. Very little bone was recovered from the Phase I and II excavations; the majority of the bone was found during the Phase III excavations, primarily from within the features. Most of the bone from the Phase I and II excavations consisted of large domesticated mammal species, including cattle, pig, and sheep. There was very little faunal material of interest recovered from the shovel test and plowzone excavations other than a few pieces of small mammal, fish, and bird. Opossum and rabbit were present in STP 34A and chicken in STP 35. One piece of stony coral was present in STP 30. Unit PZ51 contained one piece of stony coral, Unit PZ26 a dog bone, Unit PZ251 a rabbit bone, and Unit PZ60 an unidentified fish bone.

The Phase III excavations yielded a great variety of mammal, bird, reptile, and fish species. Faunal materials were recovered from 17 features. Table C.2 summarizes the species represented in each

Table C.1. Faunal Summary Recovered by Phase and Excavation Unit by Total Number of Fragments (TNF) and Minimum Number of Units (MNU)

	SHOVEL TESTS		TEST UNITS/ PLOWZONE		FEATURES		TOTAL	
PHASE	TNF	MNU	TNF	MNU	TNF	MNU	TNF	MNU
Phase I	281	69	-	-	-	-	281	69
Phase II	98	11	27	11	-	-	125	30
Phase III	-	-	258	55	8,865	3,031	9,123	3,086
Total TNF/MNU	379	80	285	66	8,865	3,031	9,529	3,185

of the Stage 1-level features. The Stage 1 features included the following: Feature 2, an uncompleted cellar; Feature 8, the drain associated with the dairy; Feature 27, a well; Features 30, 31, 55, 58, and 59, all pits; Feature 38, a tree hole; and Features 47, 50, 53, and 56, all postholes. The faunal material recovered from these features is briefly described. Features 1, 4, 15, and 29, the Stage 2-level features, yielded the largest concentrations of bone, and the faunal material recovered from these features is examined in greater detail.

Analysis of Bone from the Stage 1-Level Features

Feature 2, a partially excavated cellar, contained 29 bone fragments (TNF). Cattle and pig were the only identified species, and both were represented by dietary refuse (see Table C.2). Pork meat cuts included a shoulder ham and a ham hock, and beef consisted of a shank. The pork bones exhibited canine gnaw marks.

Feature 8, the drain associated with Feature 15, the dairy, contained 17 bone fragments. These consisted of cattle and medium and large mammal bone (see Table C.2). All of this material was dietary in nature. Beef cuts included roasts from the chuck, loin, and arm. Medium mammal consisted of thoracic vertebrae, probably from pig, and large mammal consisted of unidentified cleaved fragments.

Feature 27, a well, yielded a fairly large faunal deposit, consisting of 253 bone fragments. Almost all of the bone came from mammal, although a small number of bird, fish, and reptile bone fragments were also present (see Table C.2). Identified mammal species included cattle, pig, rabbit, and sheep. Medium and large mammal were the categories represented in the greatest proportions. The bone deposit from this feature was composed of a mix of butchery/processing waste and dietary refuse. Processing waste was evident from the presence of cranial and foot elements from sheep, pig, rabbit, and cattle, as well as from medium and large mammal. Dietary refuse was indicated by a variety of mutton, pork, beef, and veal meat cuts, as well as by butchered fragments of longbone and vertebrae from medium and large mammal. Mutton cuts came from the shank and butt-end of the leg, and pork included a trotter. Beef cuts consisted of the chuck and shank, and veal of a cut from the leg. Throughout this deposit, several bone fragments exhibited canine gnaw marks. A few bone fragments were charred and calcined and a fair number were stained. Bird, fish, and reptile

Table C.2. Summary of Species for Stage 1 Features by Total Number of Fragments (TNF)

SPECIES	F.2 TNF	F.8 TNF	F.27 TNF	F.30 TNF	F.31 TNF	F.38 TNF	F.47 TNF	F.50 TNF	F.53 TNF	F.55 TNF	F.56 TNF	F.58 TNF	F.59 TNF
Mammal													
Cat	-	-	-	-	-	-	-	-	2	-	-	-	-
Cattle	2	3	29	28	-	8	-	-	2	1	-	-	15
Horse	-	-	-	-	-	-	-	-	-	-	-	-	4
Opossum	-	-	-	-	-	-	-	-	-	6	-	-	-
Pig	8	-	17	124	-	14	-	-	3	22	-	5	11
Rabbit	-	-	3	-	-	-	-	-	3	-	-	-	-
Rodent	-	-	-	-	-	1	-	-	2	-	-	-	-
Sheep	-	-	13	3	-	1	-	-	-	5	-	-	1
Small	-	-	4	1	-	1	-	-	5	1	-	-	-
Medium	-	5	110	22	5	17	-	2	19	28	-	3	11
Large	19	9	71	26	10	21	-	-	4	13	-	1	3
Subtotal TNF	29	17	247	204	15	63	-	2	40	76	-	9	45
Bird													
Chicken	-	-	-	-	-	-	-	-	2	3	-	-	-
Duck	-	-	-	-	-	-	-	-	-	-	1	-	-
Goose	-	-	-	-	-	1	-	-	-	-	-	-	-
Small	-	-	2	-	-	-	-	-	-	-	-	-	-
Unidentified	-	-	1	1	1	-	-	-	-	4	-	1	-
Subtotal TNF	-	-	3	1	1	1	-	-	2	7	1	1	-
Fish													
Catfish	-	-	-	-	-	-	-	-	2	-	-	-	-
Unidentified	-	-	2	-	-	-	-	-	-	21	-	-	-
Subtotal TNF	-	-	2	-	-	-	-	-	2	21	-	-	-
Reptile													
Snapping Turtle	-	-	-	-	-	12	-	-	-	5	-	-	-
Unidentified Turtle	-	-	1	11	-	-	2	-	4	-	-	-	-
Subtotal TNF	-	-	1	11	-	12	2	-	4	5	-	-	-
Bone													
Unidentified	-	-	-	-	-	-	-	-	-	1	-	-	-
Subtotal TNF	-	-	-	-	-	-	-	-	-	1	-	-	-
Total TNF	29	17	253	216	16	76	2	2	48	110	1	10	45

remains were not identified by species. All three were present in low frequencies. Reptile was represented by a turtle carapace fragment.

Feature 30, a pit adjacent to Feature 29, also contained a fairly large bone deposit, consisting of 216 fragments. The deposit was composed of mammal, bird, and reptile (see Table C.2). As in Feature 27, mammal bone predominated. Identified species included cattle, pig, and sheep.

The deposit consisted of a mix of butchery/processing waste and dietary refuse. Butchery/processing waste was represented by one pig skull, and cattle by cranial and foot bones. Dietary refuse was composed of a number of meat cuts. Mutton cuts included roasts from the shank and butt-end of the leg. Pork consisted of a single shank ham. Beef cuts were the most varied, and included roasts from the rib and chuck and stew meats from the foreshanks and hindshanks. Other evidence of dietary refuse was indicated by medium and large mammal longbone and vertebrae fragments. Butchering marks included chop and cleaver marks and table cut marks. Bird and reptile were not identified by species. Reptile consisted of fragments of turtle carapace and plastron. One carapace fragment bore cut marks. A small number of bones in the deposit exhibited canine gnaw marks and a few fragments were charred, calcined, or stained.

Feature 31, a pit, contained a small bone deposit, consisting of 16 fragments. This material was composed almost entirely of medium and large mammal (see Table C.2). One unidentified bird fragment was present. Four bone fragments were burned.

Feature 38, a tree hole, contained 76 bone fragments. This feature was composed primarily of dietary refuse, along with small amounts of butchery/processing waste. It was made up of mammal, bird, and reptile species (see Table C.2). Mammal species included cattle, pig, sheep, and an unidentified rodent species. Mammal bone consisted of dietary refuse and butchery/ processing waste. Dietary refuse was represented by a variety of cuts, including a mutton shoulder roast; pork ham hocks and a picnic ham; and beef stew meats from the chuck and shank and a short rib cut. Other dietary refuse was indicated by medium and large mammal longbone and vertebrae fragments. Butchery/processing waste was present in the form of a butchered pig mandible, cattle teeth, and medium and large mammal skull fragments. Bird and reptile remains also consisted of dietary refuse. Goose was the only bird identified, and was represented by a breast. Reptile species were represented by snapping turtle, consisting of fragments of longbones and carapace. The snapping turtle longbones exhibited cut marks. The deposit included several pieces of bone that exhibited chop marks and table cut marks. A few pieces were either charred or calcined and a few bore canine gnaw marks.

Features 47 and 50, postholes, each yielded two fragments of bone. Feature 47 contained two fragments of an unidentified turtle carapace. Feature 50 contained two medium mammal longbone fragments. None of the bone from either feature exhibited bone modifications.

Feature 53, a posthole, yielded a small bone deposit, consisting of 48 fragments. Although small, the deposit was diversified in terms of the range of species represented. Most of the deposit was composed of mammal bone, including cat, cattle, pig, rabbit, and rodent (see Table C.2). Bird, fish, and reptile remains were also found. The material was almost all dietary refuse, with much of the bone exhibiting table cut marks as well as a few cleaver marks. Unlike the bone from other features discussed above, the gnaw marks observed on the large mammal bone from this feature were made by rodent incisors, not canine teeth. This suggests the presence of rodent scavenging activities. Bird consisted of chicken longbones. Fish was represented by a catfish skull bone. Reptile included

carapace fragments from unidentified turtle. A small number of bone fragments were charred or calcined and a few pieces of bone were stained.

Feature 55, a pit located in Structure B, yielded a fair-sized bone deposit, consisting of 110 fragments. It was composed of mammal, bird, fish, and reptile species. Mammal included cattle, opossum, pig, and sheep. Bird species consisted of chicken, and reptile species consisted of snapping turtle. One of the most notable features of the bone recovered from this feature was the almost complete absence of gnaw marks; gnaw marks were restricted to canine marks on four medium mammal longbone fragments. The deposit represents a mix of butchery/processing waste, dietary refuse, and possible intrusive material. Butchery/processing waste is indicated by cranial and foot bone from sheep, pig, cattle, medium and large mammal, and fish. The sheep cranial bone came from a newborn. Dietary refuse was evident from mutton, pork, and beef meat cuts, as well as from chicken elements. Mutton consisted of a stew cut from the shoulder and hindshank, pork of a shank ham, and beef of a round roast. Components that may have been intrusive include bones of snapping turtle and opossum. None of the skeletal elements from either of these species exhibited butchering or gnaw marks.

Feature 56, a posthole, yielded one fragment of bone. It consisted of a duck wing element that was stained. Feature 58, a pit, contained 10 bone fragments, consisting of nine mammal fragments and one bird fragment.

Analysis of Bone from the Stage 2-Level Features

Four features were selected for intensive, or Stage 2-level, analysis: Features 1, 4, 15, and 29. The two early features (Features 4 and 29) are discussed first, followed by a discussion of the two later features (Features 1 and 15). The comparative unit of measure used for these discussions is the Minimum Number of Units (MNU). Some discrepancies will be apparent between Table C.3 and Tables C.4 through C.7. Table C.3 presents the total MNU counts by species. Tables C.4 through C.7 present body parts distributions for pig, sheep, and cattle. The counts reflected in the latter tables have been adjusted for paired elements as well as for the reduction of the importance of loose teeth. For example, if a pig cranium, three molars, and a partial mandible were present, these would be adjusted to an MNU count of one, whereas four right pig mandibles would remain as an MNU count of four.

Feature 4, a cellar, one of the early features, yielded a fairly large faunal deposit, consisting of 306 MNU (see Table C.3). The deposit was primarily dietary refuse, with small amounts of butchery and processing waste. Mammal, bird, fish, and reptile species were represented. Mammal included a variety of domesticated, exploited, and intrusive species. Domesticated species consisted of cattle, dog, horse, pig, rabbit, and sheep. Exploited species included opossum, raccoon, and squirrel, and intrusive species included rat and other unidentified rodents.

The most frequent mammal species in Feature 4 were cattle, pig, and sheep, with pig the most common. There were 71 pig MNU, adjusted to 25 MNU, representing dietary refuse and processing

Table C.3. Summary of Features 1, 4, 15, and 29 by Species and Minimum Number of Units (MNU)

	FEATURE 1		FEATURE 4		FEATURE 15		FEATURE 29	
SPECIES	MNU	%	MNU	%	MNU	%	MNU	%
Mammal								
Cat	27	2%	-	-	-	-	6	1%
Cattle	165	10%	61	20%	43	21%	72	12%
Cottontail	3	<1%	-	-	-	-	-	-
Deer	1	<1%	-	-	-	-	1	<1%
Dog	4	<1%	1	<1%	1	<1%	3	<1%
Horse	-	-	9	3%	9	5%	-	-
Human	1	<1%	-	-	-	-	-	-
Mink	2	<1%	-	-	-	-	-	-
Muskrat	34	2%	-	-	9	5%	-	-
Opossum	4	<1%	3	1%	1	<1%	1	<1%
Pig	417	24%	71	23%	35	17%	64	10%
Rabbit	22	2%	3	1%	4	2%	9	2%
Raccoon	-	-	1	<1%	2	1%	2	<1%
Rat	83	5%	5	2%	13	6%	11	2%
Rodent	22	2%	2	<1%	2	1%	16	3%
Sheep	83	5%	52	17%	12	6%	34	6%
Squirrel, Fox	7	<1%	1	<1%	-	-	-	-
Squirrel, Gray	11	1%	-	-	1	<1%	-	-
Woodchuck	2	<1%	-	-	-	-	-	-
Small	72	4%	6	2%	5	2%	15	3%
Medium	118	7%	17	5%	10	5%	36	6%
Large	15	1%	5	2%	6	3%	5	<1%
Subtotal MNU	1,093	64%	237	77%	153	74%	275	44%
Bird								
Blue Jay	8	<1%	-	-	-	-	-	-
Chicken	110	6%	11	4%	19	9%	53	9%
Duck	22	2%	5	2%	-	-	-	-
Goose	48	3%	2	<1%	2	1%	15	3%
Pigeon	18	1%	4	1%	1	<1%	11	2%
Red-bellied Woodpecker	2	<1%	-	-	-	-	-	-
Turkey	8	<1%	-	-	-	-	3	<1%
Unidentified	111	6%	10	3%	9	4%	25	3%
Subtotal MNU	327	19%	32	10%	31	15%	107	17%
Fish								
Catfish	58	3%	6	2%	11	5%	11	2%
Cod	-	-	-	-	-	-	1	<1%
Drum	1	<1%	-	-	-	-	-	-
Salmonid	-	-	1	<1%	-	-	-	-
Shad	53	3%	7	2%	-	-	2	<1%
Striped Bass	15	1%	-	-	-	-	-	-
Unidentified	127	7%	19	6%	2	1%	218	35%
Subtotal MNU	254	15%	33	11%	13	6%	232	38%

Table C.3 continued

SPECIES	FEATURE 1 MNU	FEATURE 1 %	FEATURE 4 MNU	FEATURE 4 %	FEATURE 15 MNU	FEATURE 15 %	FEATURE 29 MNU	FEATURE 29 %
Blanding's Turtle	-	-	1	<1%	4	2%	-	-
Box Turtle	3	<1%	-	-	3	2%	-	-
Pond Slider	-	-	-	-	2	1%	-	-
Snapping Turtle	12	1%	-	-	-	-	1	<1%
Soft-shell Turtle	1	<1%	-	-	-	-	-	-
Unidentified Turtle	10	<1%	2	1%	-	-	4	<1%
Subtotal MNU	26	1%	3	1%	9	5%	5	<1%
Bone								
Unidentified	2	<1%	1	<1%	-	-	-	-
Subtotal	2	<1%	1	<1%	-	-	-	-
Total TNF	1,704	100%	306	100%	206	100%	619	100%

Table C.4. Summary of Pork Butcher Units (SBC) and Meat Cuts (RMC) for Features 1, 4, 15, and 29 by Minimum Number of Units (MNU)*

BUTCHER UNIT	MEAT CUT	RANK	FEATURE 1 MNU	FEATURE 1 %	FEATURE 4 MNU	FEATURE 4 %	FEATURE 15 MNU	FEATURE 15 %	FEATURE 29 MNU	FEATURE 29 %
Shoulder										
	Boston Butt	3	26	19%	4	16%	1	5%	6	17%
	Picnic Ham	4	11	8%	4	16%	2	10%	2	5%
		Subtotal	37	27%	8	32%	3	15%	8	22%
Ham										
	Butt Ham	1	10	7%	2	8%	3	15%	6	17%
	Shank Ham	4	20	15%	3	12%	4	20%	7	19%
		Subtotal	30	22%	5	20%	7	35%	13	36%
Loin										
	Rib End	2	14	10%	-	-	-	-	1	3%
	Loin End	2	11	8%	1	4%	2	10%	3	8%
		Subtotal	25	18%	1	4%	2	10%	4	11%
Other Body Parts										
	Head	6	14	10%	4	16%	2	10%	6	17%
	Hock	6	6	4%	2	8%	4	20%	2	5%
	Trotter	6	25	19%	5	20%	2	10%	3	8%
		Subtotal	45	33%	11	44%	8	40%	11	30%
	Total MNU		137	100%	25	100%	20	100%	36	100%

*Excludes neonates

Table C.5. Summary of Beef Butcher Units (SBC) and Meat Cuts (RMC) for Features 1, 4, 15, and 29 by Minimum Number of Units (MNU)

BUTCHER UNIT	MEAT CUT	RANK	*FEATURE 1*		*FEATURE 4*		*FEATURE 15*		*FEATURE 29*	
			MNU	%	MNU	%	MNU	%	MNU	%
Chuck										
	Neck	8	11	13%	5	13%	3	10%	7	15%
	Chuck/Blade	5	14	16%	4	10%	5	18%	7	15%
	Arm	6	3	4%	1	3%	4	14%	2	4%
	Foreshank	9	5	6%	1	3%	1	4%	3	7%
		Subtotal	33	39%	11	29%	13	46%	19	41%
Prime Rib										
	Rib	2	6	7%	1	3%	2	7%	1	2%
	Short Rib	6	-	-	1	3%	-	-	1	2%
		Subtotal	6	7%	2	6%	2	7%	2	4%
Plate										
	Plate	7	-	-	-	-	-	-	5	10%
		Subtotal	-	-	-	-	-	-	5	10%
Loin										
	Loin	1	4	5%	-	-	2	7%	3	7%
		Subtotal	4	5%	-	-	2	7%	3	7%
Round										
	Sirloin	2	-	-	2	6%	1	4%	1	2%
	Rump	4	7	8%	5	13%	1	4%	2	4%
	Round	3	3	3%	4	10%	2	7%	4	9%
	Hindshank	9	16	19%	8	20%	2	7%	3	7%
		Subtotal	26	30%	19	49%	6	22%	10	22%
Other Body Parts										
	Head	9	4	5%	2	6%	1	4%	4	9%
	Foot	10	12	14%	4	10%	4	14%	3	7%
		Subtotal	16	19%	6	16%	5	18%	7	16%
	Total MNU		85	100%	38	100%	28	100%	46	100%

waste. Processing waste consisted of four butchered skulls (see Table C.4). Dietary refuse was indicated by a wide variety of cuts, most of which represented hams or roasts from the shoulder and ham, as well as a few chops from the loin. Stew meats were also present, including trotters and ham hocks. There were 61 cattle MNU, adjusted to 38 beef MNU and 2 veal MNU. Cattle was represented by dietary refuse, processing waste, and butchery waste. Dietary refuse consisted of a variety of meat cuts, including roasts and stew meats from the chuck and round as well as a few steaks from the prime rib. Veal was represented by a leg roast and stew meat from the shank. Processing waste consisted of butchered mandibles and metapodials. Butchery waste was also present, although in small amounts, and consisted of toe bones. There were 52 sheep MNU, adjusted to 22 MNU, representing dietary and processing waste (see Table C.7). Processing waste consisted

Table C.6. Summary of Veal Butcher Units (SBC) and Meat Cuts (RMC) for Features 1, 4, 15, and 29 by Minimum Number of Units (MNU)

			FEATURE 1		FEATURE 4		FEATURE 15		FEATURE 29	
BUTCHER UNIT	MEAT CUT	RANK	MNU	%	MNU	%	MNU	%	MNU	%
Shoulder										
	Chuck	4	1	11.1%	-	-	-	-	-	-
	Foreshank	6	2	22.2%	1	50%	2	100%	-	-
		Subtotal	3	33.3%	1	50%	2	100%	-	-
Leg										
	Leg	2	2	22.2%	1	50%	-	-	2	67%
		Subtotal	2	22.2%	1	50%	-	-	2	67%
Other Body Parts										
	Head	6	3	33.3%	-	-	-	-	1	33%
	Foot	7	1	11.1%	-	-	-	-	-	-
		Subtotal	4	44.4	-	-	-	-	1	33%
		Total MNU	9	100%	2	100%	2	100%	3	100%

Table C.7. Summary of Mutton Butcher Units (SBC) and Meat Cuts (RMC) for Features 1, 4, 15, and 29 by Minimum Number of Units (MNU)

			FEATURE 1		FEATURE 4		FEATURE 15		FEATURE 29	
BUTCHER UNIT	MEAT CUT	RANK	MNU	%	MNU	%	MNU	%	MNU	%
Shoulder										
	Chuck	4	4	8%	2	9%	-	-	2	8%
	Foreshank	7	18	34%	6	27%	6	67%	5	20%
		Subtotal	22	42%	8	36%	6	67%	7	28%
Bracelet										
	Rack	1	5	9%	2	9%	-	-	1	4%
		Subtotal	5	9%	2	9%	-	-	1	4%
Loin										
	Loin	1	5	9%	1	5%	1	11%	4	16%
		Subtotal	5	9%	1	5%	1	11%	4	16%
Leg										
	Butt End	4	5	9%	4	18%	-	-	6	24%
	Shank End	3	8	16%	1	5%	-	-	3	12%
	Hindshank	7	3	6%	4	18%	1	11%	2	8%
		Subtotal	16	31%	9	41%	1	11%	11	44%
Other Body Parts										
	Head	7	5	9%	2	9%	1	11%	2	8%
		Subtotal	5	9%	2	9%	1	11%	2	8%
		Total	53	100%	22	100%	9	100%	25	100%

of two skulls and mandibles. One of the mandibles bore butcher marks. There were roasts and stew meats from the shoulder and leg as well as a few chops from the bracelet and loin. Shank cuts predominated, followed by roasts from the butt-end of the leg.

Some of the other mammal species from Feature 4, including opossum, rabbit, and horse, also exhibited butcher marks. Opossum was represented by the skull, forelimb, and upper hindlimb. Rabbit consisted of the forelimb and hindlimb. Horse skeletal elements with butcher marks included the head and metapodials. Dog, rat, squirrel, and raccoon did not exhibit butcher marks.

The bird species identified in Feature 4 included chicken, duck, goose, and carrier pigeon (see Table C.3). Chicken was the most frequent species. All of the bird species were represented by edible body parts. With the exception of a duck bill and three chicken metatarsi, no evidence of bird processing was noted. Identified fish species included catfish and shad. A salmonid species, probably trout, was also present. All of the fish remains represented processing waste. They were composed of skull, scales, and fins. Turtle species consisted of Blanding's turtle. This edible species was represented by carapace fragments.

Feature 4 bone modifications included gnaw marks, heat exposure, butcher marks, and weathering (Table C.8). Gnaw marks were frequent. They were present on 20 percent of the bone and included both rodent and canine gnaw marks. Evidence of heat exposure, or burned bone, was infrequent. There was more charred bone than calcined bone. Butcher marks were very frequent, being present on 44 percent of the bone. In general, the butcher marks can be categorized as cleaver, chop, and slice marks. Weathering was also frequent and consisted primarily of stains on the bone fragments.

Feature 29, a well, the other early feature to be discussed, yielded a large and diversified faunal deposit, consisting of 619 MNU (see Table C.3). The deposit was composed of a mix of dietary refuse, processing waste, and butchery waste, and included mammal, bird, fish, and reptile species. Mammal species were the most frequent, and included domesticated, exploited, and intrusive species. Domesticated species included cat, cattle, dog, pig, rabbit, and sheep (see Table C.3). Potentially exploited species included opossum, raccoon, and deer. Intrusive species consisted of rat.

The most common mammal species in Feature 29 were pig, cattle, and sheep (see Table C.3). Pig consisted of 64 MNU, representing 36 adjusted MNU. It was composed of dietary refuse and processing waste. Dietary refuse consisted of several roasts from the shoulder and ham, as well as stew meats, such as hocks and trotters (see Table C.4). Processing waste was evident from six paired mandibles and possibly associated skulls that exhibited butcher marks. There were 72 cattle MNU, representing 49 adjusted MNU. There was a mix of beef and veal dietary refuse and processing waste. Beef included large cuts of meat from the chuck, prime rib, plate, loin, and round. Processing waste consisted of butchered skull and mandibles. Veal included two leg roasts and a butchered skull. There were 34 sheep MNU, representing 25 adjusted MNU. Almost all of this material was dietary (see Table C.7). Meat cuts were predominantly roasts and stew meats from the

Table C.8. Summary of Bone Modifications by Type, Feature, and Total Number of Fragments (TNF)

BONE MODIFICATION TYPE	FEATURE 1 TNF	FEATURE 4 TNF	FEATURE 15 TNF	FEATURE 29 TNF	ALL OTHER FEATURES TNF
Gnaw Mark					
Presence	22	7	10	6	14
Rodent	261	23	5	7	12
Canine	108	29	16	59	62
Canine and Rodent	1	-	-	10	-
Total TNF	392	59	31	82	88
Heat Exposure					
Presence	3	-	-	1	-
Charred	19	26	44	25	30
Calcined	144	3	7	81	19
Polished	-	-	-	-	2
Total TNF	166	29	51	107	51
Butcher Mark					
Sawed	1	-	8	4	-
Bisected	15	2	6	10	2
Slice/Table Cut Marks	107	62	60	96	39
Chopped	98	46	57	90	29
Cleaved	75	18	28	107	17
Quartered	8	5	6	7	1
Total TNF	181	133	165	314	88
Weathering					
Presence	18	1	3	3	13
Flaking Cortex	15	1	-	-	1
Stained	251	88	13	168	87
Total TNF	284	90	16	171	101

shoulder and leg. There were also a few chops from the bracelet and loin. Processing waste was indicated by a single mandible.

Feature 29 had a small range of bird species, including chicken, goose, pigeon, and turkey (see Table C.3). Chicken was the most frequent species. Each of these species was represented primarily by edible body parts. A few metatarsi suggest the presence of processing waste resulting from the cleaning of bird carcasses. Identified fish species were limited to catfish, cod, and shad, all of which were represented by skull elements. Most of the unidentified fish consisted of skull, fin, and scale elements. Unlike Feature 4, this deposit also contained a small number of fish vertebrae. Reptile species included snapping turtle. Both snapping turtle and unidentified turtle were represented mainly by carapace fragments.

Bone modifications present on the bone from Feature 29 included gnaw marks, heat exposure, butcher marks and weathering (see Table C.8). Gnaw marks included a small number of bones with rodent gnawing as well as some fragments with both canine and rodent gnawing. Most of the gnawed fragments exhibited canine gnaw marks. A fairly large number of fragments were heat exposed. One hundred and seven TNF were either charred or calcined. Butcher marks were present on at least 50 percent of the bone in the deposit. These included saw, chop, cleaver, and slice marks. Saw marks were less frequent than the other types. Weathering was also common, and consisted primarily of staining.

The bone deposits from the two early features were similar in terms of the range of species and types of skeletal compositions represented. Domesticated livestock was the most common group represented. Exploited mammal, fish, and reptile species were present in low frequencies. In addition, the methods used for butchering carcasses were basically the same. Most of the meat cuts represented consisted of large cuts of meat that had been cleaved or chopped.

Feature 1, the later cellar, contained the largest of the site's deposits. It yielded 1,704 MNU, and was composed of a mix of dietary refuse, processing waste, and butchery waste. A wide range of mammal, bird, fish, and reptile species were represented (see Table C.3). Mammal species included domesticated, exploited, and intrusive species. Domesticated species consisted of cat, cattle, dog, pig, rabbit, and sheep. Of these, cat and dog are commensal species. Possibly exploited mammal species included cottontail, mink, muskrat, opossum, raccoon, squirrel, and woodchuck. Of these, only mink bore any obvious butcher marks. These small mammals were composed of cranial and postcranial skeletal elements. The large variety of species and their associated skeletal elements suggest active exploitation of these species as opposed to accidental inclusion in the deposit. Intrusive species were present in the form of rat.

In Feature 1, large domesticated mammal species predominated. Pig was the most frequent species. There were 417 MNU, representing 137 adjusted MNU. They were composed of dietary refuse and processing waste. Pork cuts included several roasts and hams from the shoulder and ham, as well as stew meats from the hocks and trotters (see Table C.4). Processing waste was indicated by several skulls and paired mandibles exhibiting butcher marks. There were 165 cattle MNU, representing an adjusted 94 MNU. Cattle included dietary refuse, processing waste, and butchery waste. Beef meat cuts included roasts and stew meats from the chuck and round. Veal meat cuts also included roasts and stew meats, from the shoulder and leg. Processing waste was indicated by butchered cranial bone. Butchery waste was evident in the form of foot bones. Sheep consisted of 83 MNU, representing 53 adjusted MNU. Mutton consisted of a preponderance of stew meat cuts from the shanks, as well as a few chops from the bracelet and loin and roasts from the leg and shoulder. A number of mandibles and skulls not exhibiting butcher marks from brain or tongue extraction suggest butchery waste.

There was a wide range of bird species identified in Feature 1, both species raised or exploited for food and nonexploited species (see Table C.3). Food-related species included chicken, duck, goose, pigeon, and turkey. Non-food-related species included blue jay and red-bellied woodpecker, both

of which were present in low frequencies. All of the edible species were represented by both edible body parts and processing waste from the removal of heads and feet. Blue jay consisted of a full range of skeletal elements, whereas the red-bellied woodpecker consisted of a foot element. A limited range of fish species was represented, including catfish, drum, shad, and striped bass. Catfish and shad were more frequent than the other fish species. Reptile species consisted of box turtle, snapping turtle, and soft-shell turtle. Although box turtle is not considered to be an edible species, the other two species are edible. All of these species were represented by longbone and turtle shell fragments. A few of the turtle longbones exhibited cut marks.

Bone modifications identified in Feature 1 included gnaw marks, heat exposure, butcher marks and weathering (see Table C.8). Gnaw marks consisted of a high frequency of rodent marks and a lower frequency of canine marks. Evidence of heat exposure included a small number of charred fragments and a fair number of calcined fragments. Butcher marks included fairly high frequencies of chop, cleaver, and slice marks and a low frequency of saw marks. Finally, weathering was primarily indicated by several stained bone fragments and a low frequency of surface-exposed bone.

Feature 15, the dairy, and the second of the later features to be discussed, yielded a fair-sized faunal deposit, consisting of 206 MNU (see Table C.3). It was composed primarily of dietary refuse and processing waste, and a small amount of butchery waste. The deposit contained mammal, bird, fish, and reptile species. Mammal species included domesticated, exploited, and intrusive species. Domesticated species consisted of cattle, dog, horse, pig, rabbit, and sheep. Dog was the only species not associated with diet. Exploited mammal species included opossum, muskrat, and squirrel, and the intrusive species was rat.

In Feature 15, large domesticated mammal species predominated. There were 35 pig MNU, representing 20 adjusted MNU. The material was composed of dietary refuse and processing waste. There was a high frequency of cuts from the ham and lower frequencies of cuts from the shoulder, loin, and feet (see Table C.4). Processing waste was indicated by cranial bone. Cattle consisted of 43 MNU, representing 30 adjusted MNU. It was represented by dietary refuse and butchery waste. There was a high frequency of beef meat cuts from the chuck and lower frequencies from the prime rib, loin, and round (see Table C.5). In addition, two veal cuts from the shoulder were present (see Table C.6). Butchery waste was indicated by loose teeth and four foot bones. Sheep consisted of 34 MNU, representing nine adjusted MNU. Dietary refuse predominated, and was composed of a high frequency of cuts from the shoulder, one cut from the loin, and one cut from the leg. In addition, a single skull was identified, with horn stubs attached. Besides pig, cattle, and sheep, horse was present in the deposit. It was composed of two mandibles and teeth. The mandibles exhibited chop and slice marks that indicated the removal of the tongue for consumption. None of the small mammals showed signs of having been butchered. This does not mean, however, that they were not eaten or exploited for fur.

Bird species from Feature 15 were limited to chicken, goose, and pigeon. Chicken was the only species that was well represented (see Table C.3). It consisted of skull, feet, and edible body parts. One femur bore slice marks. Fish species consisted of catfish. Almost all of the fish bones were

from the skull, although there was one vertebra and one scale. Reptile was represented by three species of turtle, including Blanding's turtle, box turtle, and pond slider. Except for the box turtle, these are edible species. Almost all of the turtle bone consisted of turtle shell fragments, none of which exhibited butcher marks.

Bone modifications in Feature 15 included gnaw marks, heat exposure, butcher marks, and weathering (see Table C.8). Gnaw marks were infrequent, and consisted of rodent and canine marks. Heat exposure included a fair number of charred fragments and a small number of calcined fragments. Butcher marks were present in high frequencies (on 80 percent of the bone), and included saw, chop, cleaver, and slice marks. Weathering was infrequent and was limited primarily to staining on a few fragments.

Summary and Interpretation

The examination of faunal deposits from early and late features revealed that, overall, there are few differences and many similarities between the deposits. The most obvious difference is the greater range of mammal, bird, and reptile species present in the later features. The most interesting small mammal to appear in the later features is muskrat. This species is recognized as a regional Delaware dietary specialty. The greater range in bird species, however, is due to the presence of blue jay and woodpecker in Feature 1. Neither of these species is used as a food source. However, it is possible that they were caught for their plumage or were intrusive to the deposit. Turtle species were also more varied in the later deposits. For the most part, they were represented by turtle shell fragments and an occasional longbone. The presence of slice marks on some of the bone indicated that turtles were not accidental inclusions.

There are numerous similarities between the earlier and later deposits. During both time periods the most important sources of meat were pig, cattle, and sheep. Bird species were also important dietary components. Chicken, goose, and pigeon were consistently present in all deposits. Duck and turkey were less well represented. The presence of fish was limited to a few species. Catfish and shad were observed in both time periods. Catfish was the most common fish species found throughout the deposits.

The butchered remains of the large domesticated mammals were similar between the two periods. Pig and cattle were more common than sheep. All three species, however, were butchered into large meat cuts by chopping and cleaving. Saw marks were almost nonexistent on bone from the site. The lack of small meat cuts for most of the mammal bone indicates that the types of meat dishes prepared were meant to serve several people at once. In addition to the pig, cattle, and sheep, horse was also butchered at the site, although low frequencies of bone from horse were present. Butchered mandible bone was recovered for all four species, indicating that tongue was extracted for food. The skulls of calves, pigs, and sheep were also found butchered. Although some butchery waste was present, in the form of foot elements, for cattle, sheep, and horse, it was present overall in low frequencies, implying that the animals were slaughtered elsewhere and were then trimmed somewhere nearby on the site.

The faunal assemblage from the McKean/Cochran Farm Site showed a consistent pattern of behavior on the part of the occupants over time. During both the early and the later time periods, a heavy reliance was placed on domesticated livestock for food. However, the presence of a wide range of wild mammal, bird, fish, and reptile species also shows that the local environment was exploited through hunting or trapping, and through fishing, to supplement the diet.

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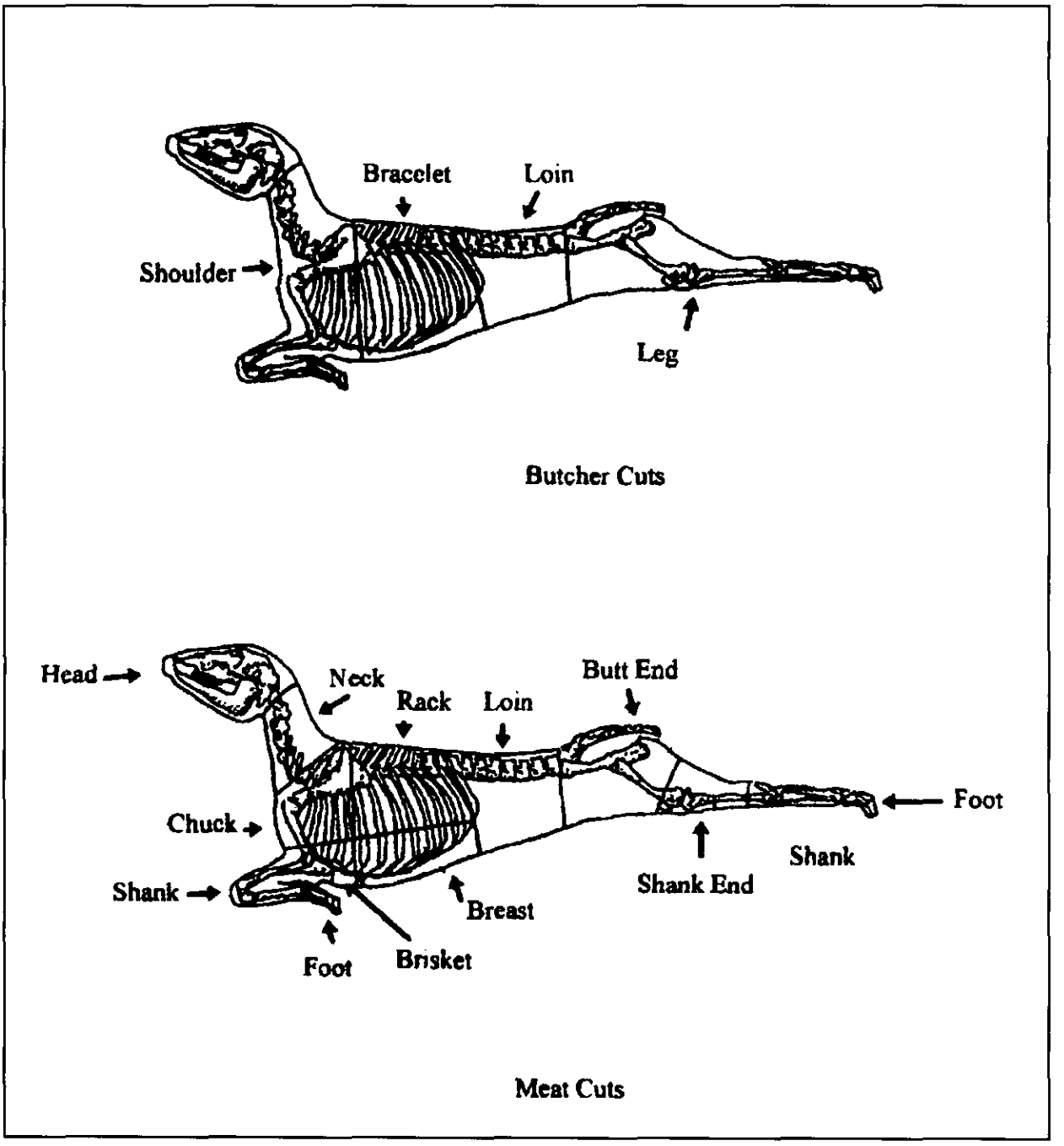
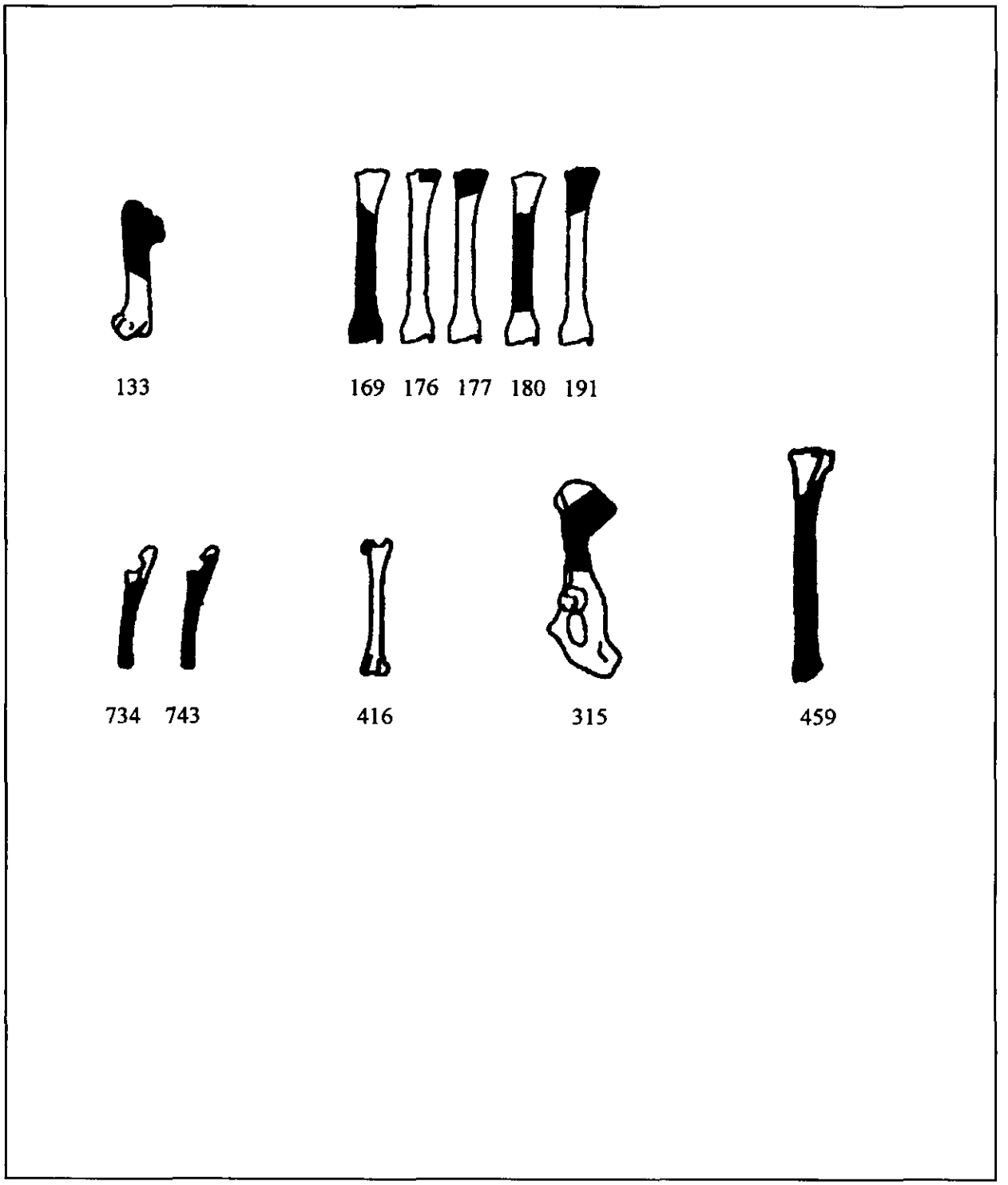


FIGURE C.1: Sheep/Mutton Butcher Cuts and Meat Cuts



Sheep/Mutton Illustrated Meat Cuts

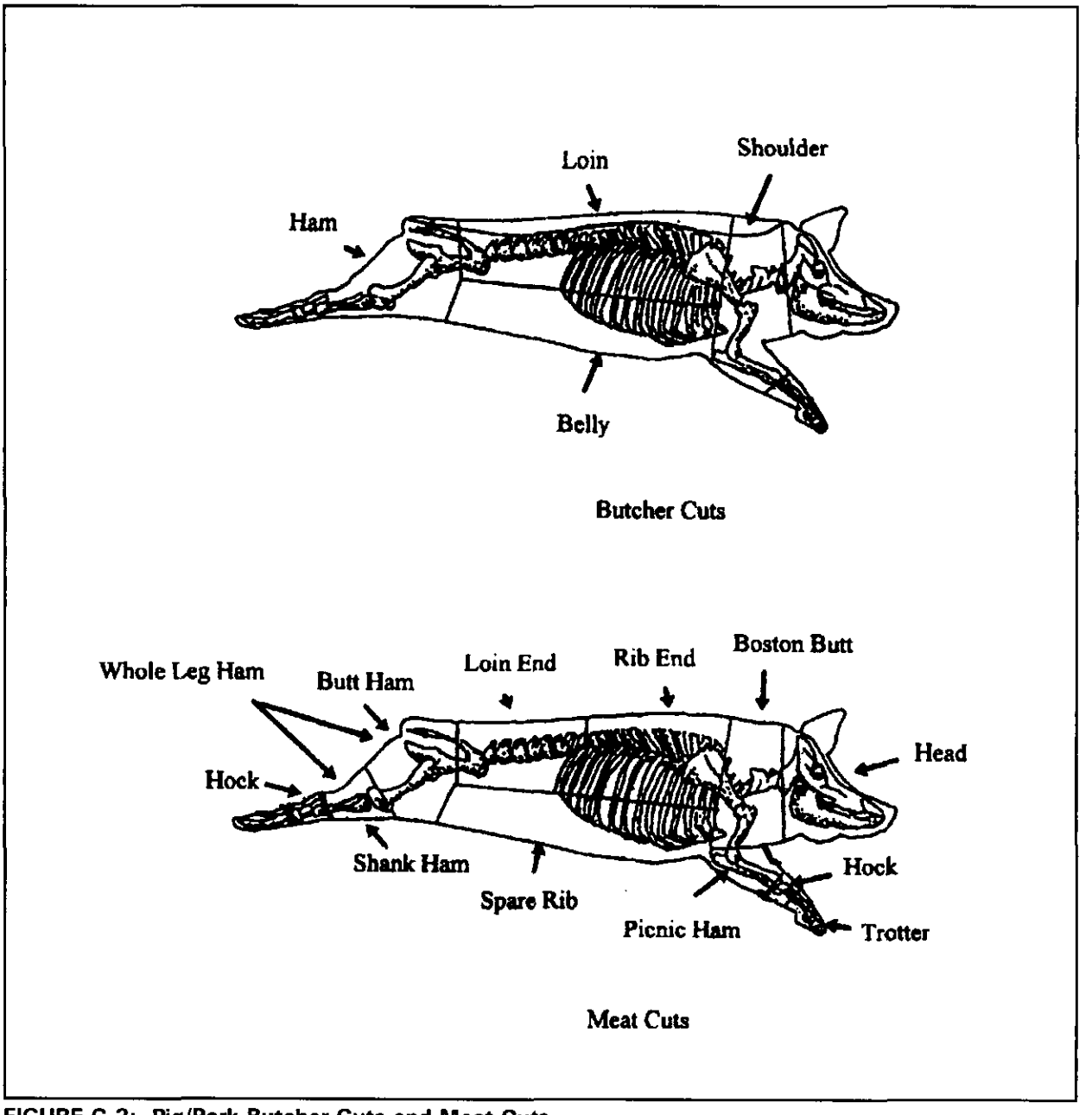
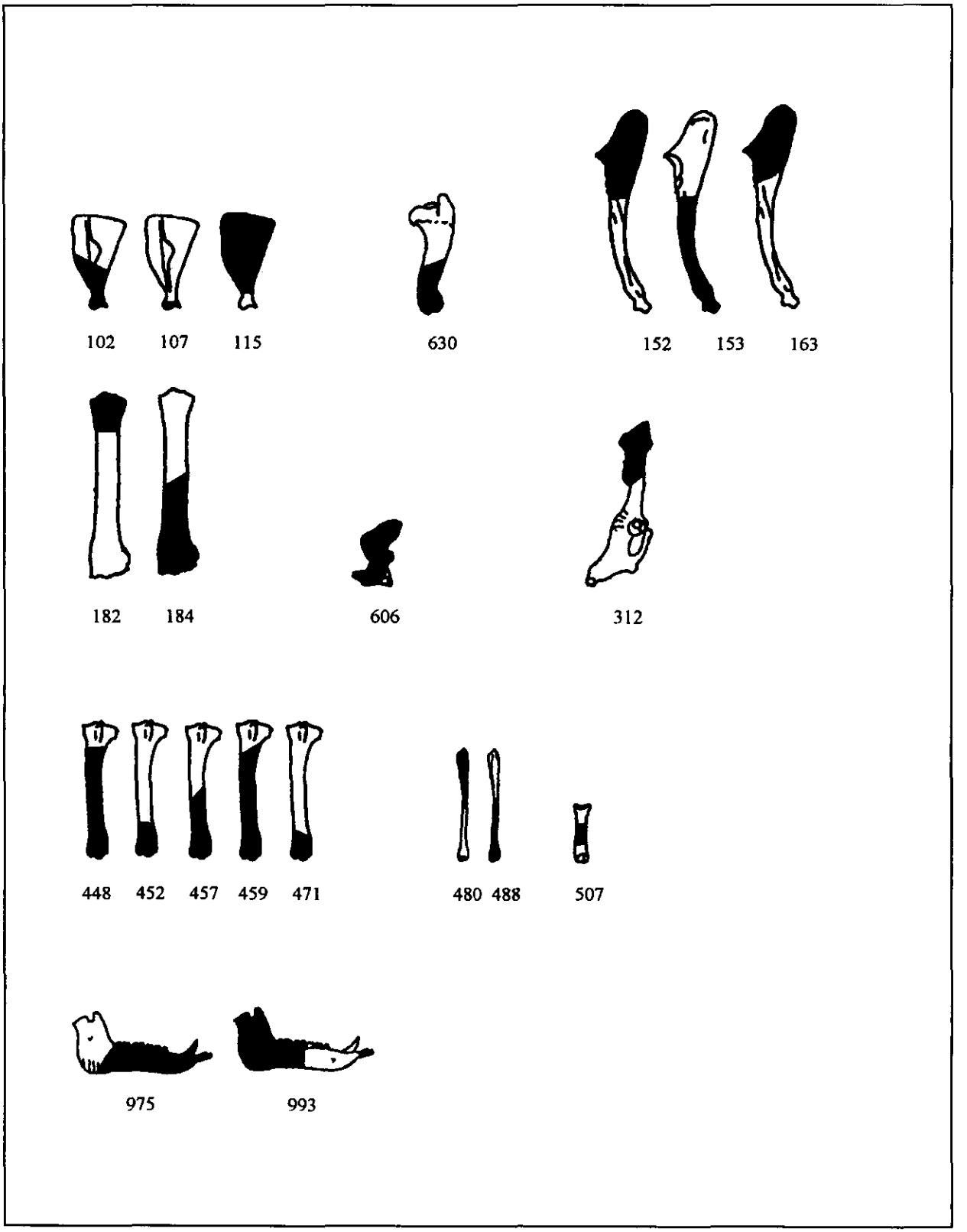


FIGURE C.2: Pig/Pork Butcher Cuts and Meat Cuts



Pig/Pork Illustrated Meat Cuts

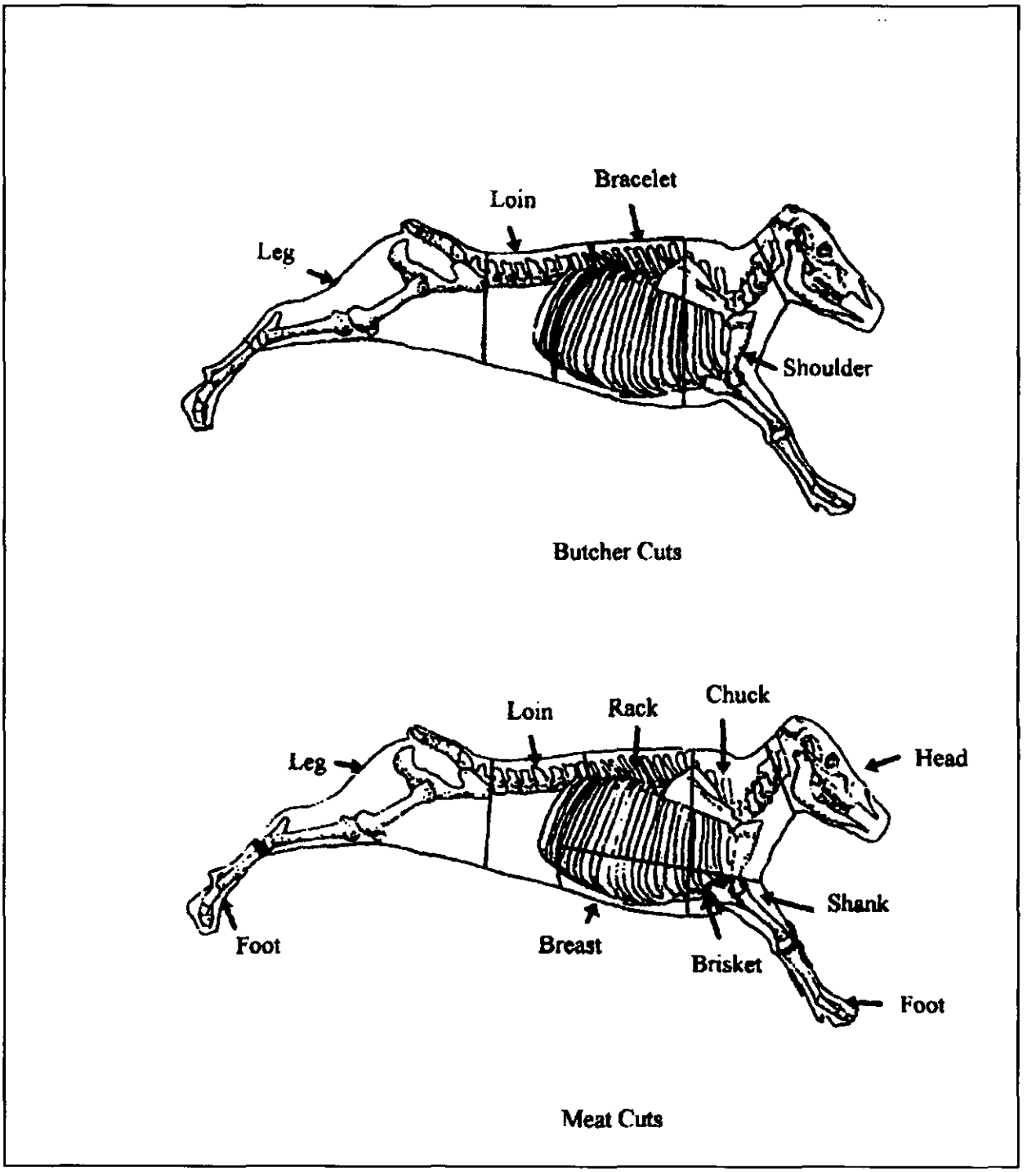


FIGURE C.3: Cattle/Veal Butcher Cuts/Meat Cuts

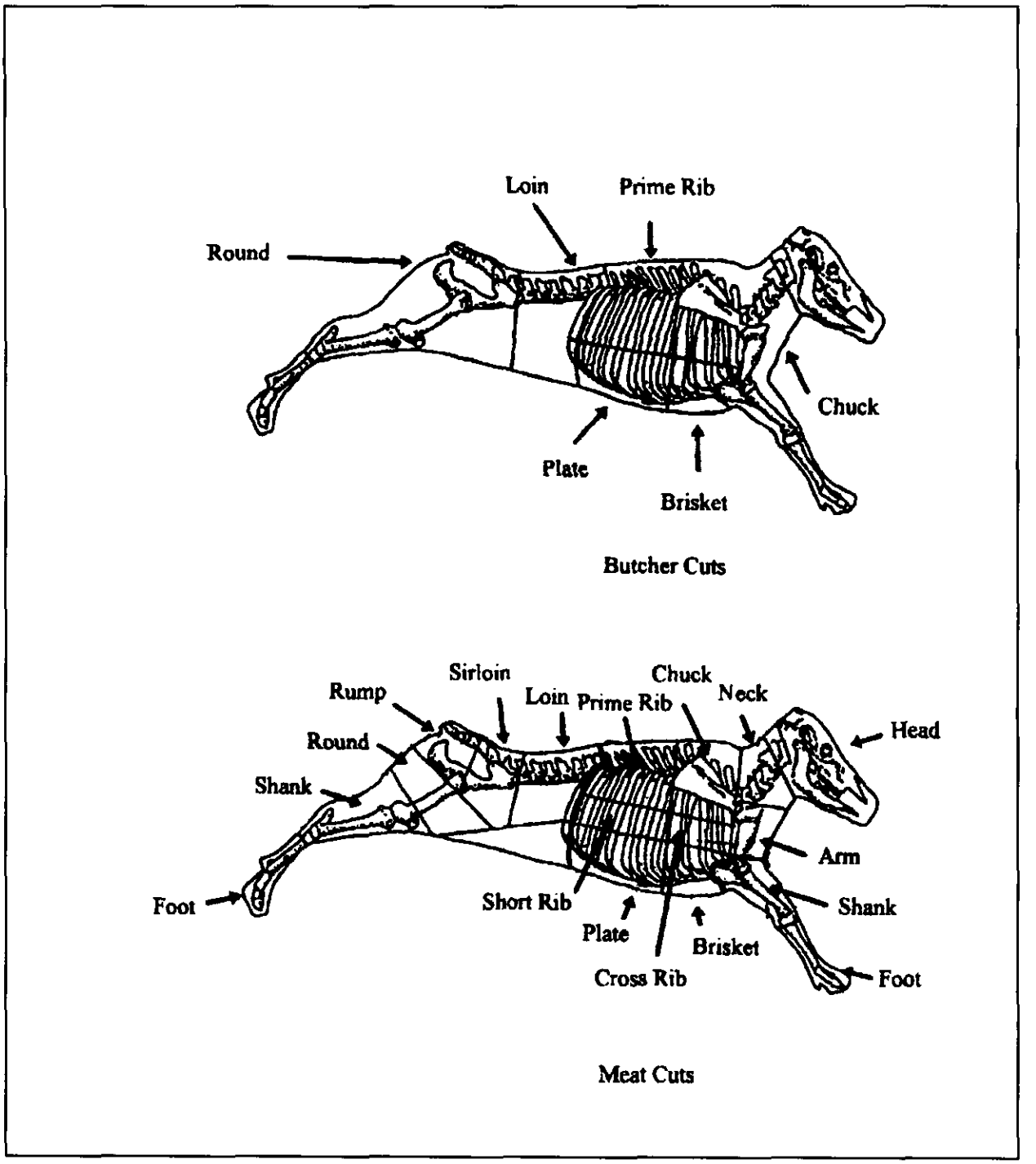
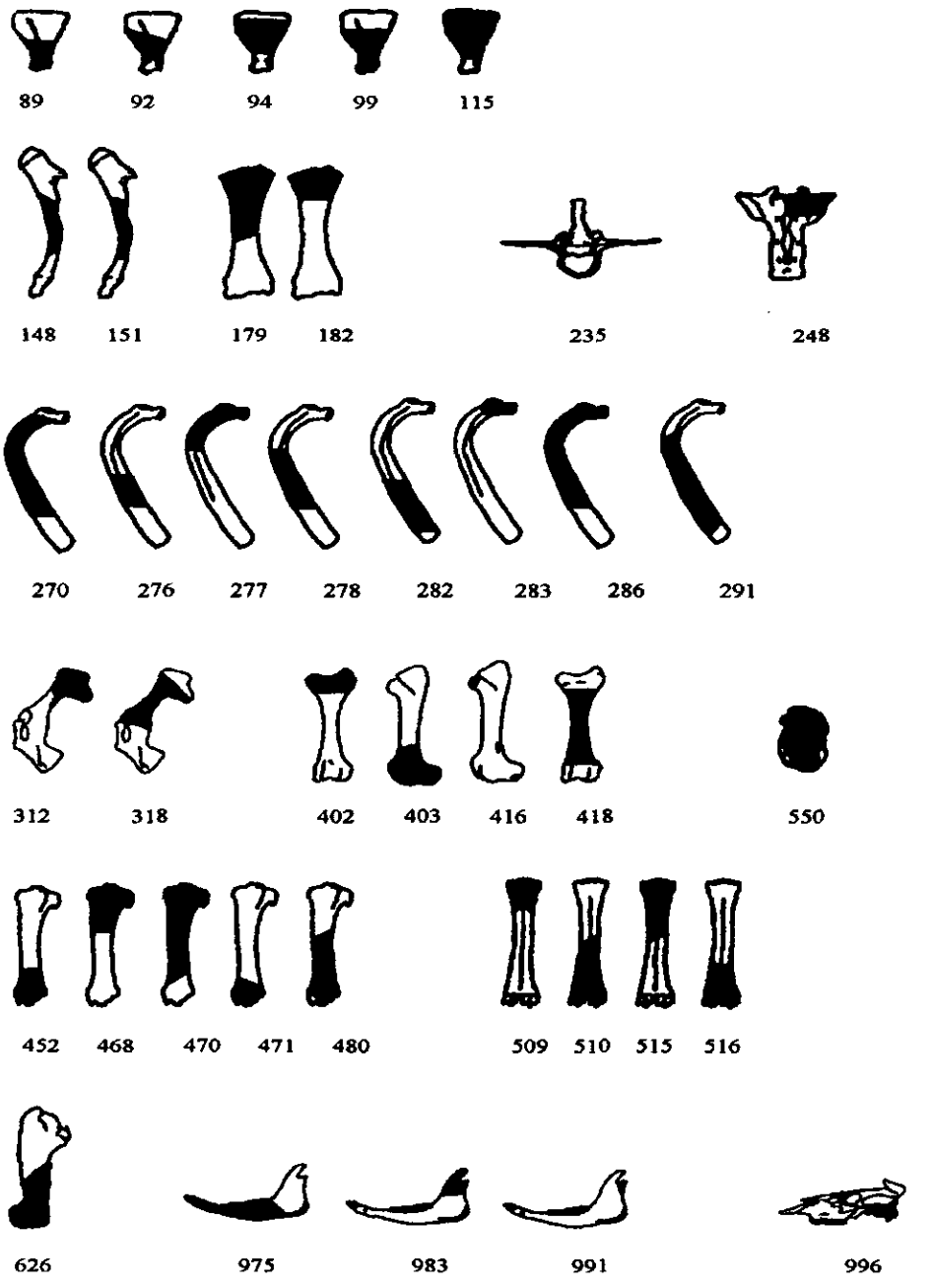


FIGURE C.4: Cattle/Beef Butcher Cuts and Meat Cuts



Cattle/Veal and Beef Illustrated Meat Cuts

APPENDIX D

AMERICAN-MADE CREAMWARES

AMERICAN-MADE CREAMWARES

The most unusual ceramics found at the McKean/Cochran Farm Site were 108 sherds from at least 11 plates made of a distinctive yellow earthenware body. Yellow-bodied refined earthenware vessels (commonly called yellowware) do not ordinarily appear on American archaeological sites before the 1830s, and do not appear in significant quantities until after mid-century. At the McKean/Cochran Farm Site the plates were excavated from Feature 1, in Stratum B, Level 2, in various units. Feature 1 was the cellar of a house built around 1800 and abandoned by 1830. Six isolated sherds were found in the plowzone and three small sherds came from the top level of Feature 27, a well abandoned about the same time as Feature 1.

The plate bodies are light yellow to buff colored and the glazes are clear. Surface colors include the following Munsell hues: 2.5Y 6/8, 5/6 and 7/6, and 10YR 6/8 and 5/6 (various shades of brownish yellow); and 5YR 5/6 and 5/8 (yellowish red).

The rims are decorated with shell edging, a style that is associated with English pearlware, creamware, and whiteware plates (Miller and Hunter 1994; Noël Hume 1970:116). Shell-edge–decorated pearlware and whiteware plates were the most common tablewares during the first half of the nineteenth century. Yellowware plates, however, were never a common form, and when seen are usually found to have been made with plain rims (McAllister and Michel 1993:97-98). There are other differences between these plates and standard yellowware vessels: their bodies are not as dense and vitrified; their foot forms, overall shapes, and body thicknesses resemble English refined earthenwares (pearlware and creamware); and their glaze is much more crazed than is typical for yellowwares.

The plates have two different rim decorations. The first is a simple shell-edge design that consists of a scalloped rim outline with straight lines colored with green that extend into the marli (rim). The lines were part of the mold or molds that were used to make the plates. The scalloped edge outline is regular, rather than uneven/rococo. This style of shell edge with straight lines is most commonly found on pearlware plates made during the first half of the nineteenth century (Miller and Hunter 1994). On pearlware, the lines can be colored with blue (most common) or green, or, infrequently, red, brown, purple, or yellow.

The second rim motif is found on octagonal plates (see Plate 19 in Chapter V). These vessels have straight rim outlines with a molded motif on the marli that imitates shell edge. Variations of this "shell edge within a straight border" design are also found on English creamware and pearlware, but they are less common than the standard "shell edge on the rim" motifs (Miller and Hunter 1994; Noël Hume 1973; Towner 1978).

Five vessels have the simple shell-edge rim decoration. Vessel 89A is a nine-inch-diameter plate which is very distinctive because of the two separate colors that go all the way through the body of

the vessel. The base is orange, the rim and cavetto (side) are yellow, and the edge is colored green. The glaze is clear and the color variations are probably caused by firing conditions; the same clay can fire to different colors, depending on the amount of oxygen available inside the kiln and the temperature reached during firing. This plate has triangular stilt marks on the base where it rested on supports, probably within saggers, in the kiln. Kiln supports leave small unglazed scars on vessels where they come into contact with the body. Vessel 89A is the most complete of the yellow-bodied plates in the assemblage, and it has only light wear on its surfaces.

Vessel 95A is another nine-inch-diameter plate; it does not completely mend, and the sherds are possibly derived from two vessels. The rim outline is a slightly irregular scallop with molded straight lines and green coloring. This plate exhibits wear marks, probably from stacking, along the angle where the marli turns into the cavetto. There are two sets of triangular stilt marks on the exterior base, and a single stilt mark on the interior face; the part of the vessel where the third set should be is missing. Vessel 96A is composed only of two rim sherds, but the lack of curvature in the rim edge indicates that it was an oval or rectangular dish or platter (i.e., a serving piece rather than a plate for individual food consumption). The rim edge is slightly scalloped, with straight lines colored green. This vessel also has wear along the angle where the marli and cavetto join. In addition to the numbered vessels, two MNVs were assigned to sherds with this simple shell-edge motif: one is an eight-inch-diameter plate and the other is a plate that is too fragmentary for measurement.

The octagonal plates, Vessels 90A through 94A, were probably made in one mold, since their forms are virtually identical. The mold (or possibly molds) might have been old and worn, because the designs are shallow and indistinct. The diameters are roughly seven inches. Even though the forms are so similar, there is variation in the colors of these plates: no two plates have identical hues, and one (Vessel 92A) has an imperfect, uneven glaze. The stilt marks are single, not triangular, and are found on the underside of the rims rather than on the face and base. There is wear at the joining areas of marlies and rims, and one plate (Vessel 94A), which has the most complete base, also shows wear along the foot ring. The octagonal plates are rather fragmentary: four are between 10 and 25 percent complete and one is between 25 and 50 percent complete. However, given the fragmentary nature of most of the vessels found in Feature 1, this condition is probably not indicative of unusual depositional circumstances.

The origin of these vessels is problematic. For the reasons noted above, they cannot be classified as yellowwares, but they are much too yellow to fit into the category of standard English creamwares. Nevertheless, they are found in Feature 1 with circa 1780 to 1820 creamware, pearlware, and Chinese porcelain vessels (see Tables 8 and 9 in Chapter V). Feature 1 also contained smaller amounts of earlier ceramic types, notably faience (tin-glazed earthenware), English white salt-glazed stoneware, and German gray stoneware. The latest datable ceramic type in Feature 1 is pearlware with transfer printing with stipple, which has a beginning manufacturing date of circa 1800. (These printed sherds do not appear in Table 8 or 9 because they were of unidentifiable forms.) The five sherds in this category are fragmentary but they represent at least two vessels. Underglaze polychrome painted and underglaze brown painted pearlware vessels, both

with beginning dates of 1795, are much more common: sherds from at least 41 polychrome vessels and four brown vessels are part of this deposit.

Pre-1830 yellow-bodied earthenwares have been found at other sites in the Middle Atlantic region, especially in Philadelphia. Sherds from a very similar green shell-edge plate were recovered from the Franklin Court Site in that city (William Liebknecht, personal communication 1997). This vessel was dated, based on its context, to between 1750 and 1780. The date is problematic, however, since this rim shape, as noted above, was not common on pearlwares until after 1800. A second, similar green-edged, scallop-rim-shaped plate (but without the molded lines) was recently excavated at the Metropolitan Detention Center Site, also in Philadelphia. This plate was found with creamwares, pearlwares, and Chinese porcelains in a privy that was filled between 1810 and 1818 (Dent et al. 1997:chapter V, 43-50). The privy fill has been correlated with a prosperous middle-class household. Another yellow-bodied vessel from this privy fill assemblage was a large (9 inches in height) plain pitcher, made in a form that is similar to plain creamware vessels. Also at the Metropolitan Detention Center Site, the remains of a barrel, probably used as a privy, held fill that included polychrome painted pearlware tea vessels and a yellow-bodied teapot with an engine-turned motif (an incised, linear design that is commonly found on English refined red-bodied teapots made circa 1760 to 1820) (Dent et al. 1997:chapter V, 75-76). At the Meadows Site in Philadelphia, sherds from hollowware vessels with unidentifiable forms were recovered from the same contexts as creamwares and pearlwares (LBA 1994:table 5.11), although their significance was not recognized at the time.

In Maryland, a surface collection from the Chick Farm Site near the Chesapeake and Ohio Canal included sherds from a yellow-bodied nappie (a cooking and serving dish) with a molded rim design that appears to have been copied from designs on whiteware manufactured after 1820 (George Miller, personal communication 1997).

It is possible that these vessels were made by local (i.e., Mid-Atlantic-region) potters in imitation of imported English tablewares. After the American Revolution, various groups of merchants and governmental organizations attempted to encourage American manufacturers to produce goods that would supply local markets with substitutes for goods made in England. These attempts were aided by the effects of Jefferson's 1807 Embargo Act and the blockade of east coast port cities by the British during the War of 1812. Potters were among the craftsmen-entrepreneurs who tried to manufacture merchandise that would fit the demands of consumers who were accustomed to English goods (Myers 1980:5-11). At that time (circa 1785 to 1815), the most popular types of tablewares were made of creamware (generally referred to in contemporary advertisements and accounts as queensware) and pearlware (also called China glaze).

One of the earliest attempts to encourage tableware production is cited by Edwin Atlee Barber (1907:25-26):

> The Pennsylvania Society for the Encouragement of Manufactures and the Useful Arts published the following advertisement in the *New Jersey Journal* at Elizabethtown, in its issue of January 25, 1792:
>
> "1. To such person as shall exhibit the best specimen of Earthenware or Pottery, approaching nearest to Queensware, or the Nottingham [an English stoneware] or Delf [delft] ware, of the marketable value of fifty dollars--a plate of the value of fifty dollars, or an equivalent in money . . ."
>
> One of the conditions of this competition was that the ware should be made in Pennsylvania or New Jersey. We are not advised of the result of this announcement.

Although it is not known if this reward resulted in the manufacture of any suitable ceramics, table vessels advertised as "queensware" were manufactured in Philadelphia before 1810 by Alexander Trotter, "a person. . .bred in England to the pottery business," at the Columbian Pottery (Myers 1980:6). In 1807, his wares were exhibited at Peale's Museum; the next year, at the "great Republican dinner of July 4," a jug and goblets from the pottery were a conspicuous part of the tablewares (Barber 1976:111). Over the next several years, various officials praised the "yellow" teapots, coffee pots, and sugar boxes of this manufactory, but no mention is made of plates until 1813, when an advertisement lists dinner plates among the "American Manufactured Queensware" of the Columbian Pottery (Myers 1980:7). The pottery closed in 1814. By 1815, Trotter was making his queensware in Pittsburgh, before possibly moving to Baltimore in 1819 (Myers 1980:88).

Another Englishman, James Charleton, was employed by John Mullowny at the pottery he established in 1810 (Myers 1980:8). Mullowny's Washington Pottery was in operation between 1810 and 1815. During this time, he introduced the first large-scale use of press-molding in American ceramic production. Press-molding speeds up and standardizes production and can be used to create a variety of decorations on vessels. By October 1812, he was advertising that

> The public are informed that Soup and Shallow plates are now ready for delivery. . .The Plates manufactured at the Washington Pottery, will be found by experience superior to imported plates, when necessary to stew on a chafing dish or embers, as they will stand the heat without cracking [Myers 1980:79].

In 1815, the pottery was bought by David Seixas, who is thereafter listed in the directories as a "queensware manufacturer" (Myers 1980:8). Under Seixas, and possibly already under Mullowny, the pottery used industrial, modern methods to produce standardized wares (Myers 1980:9).

The Columbian and Washington potteries were established by entrepreneurs who employed English potters. In contrast, Daniel Freytag was an already established Philadelphia potter who began to make refined earthenware in response to the Embargo (Myers 1980:11). Little is presently known about his wares. The tablewares made by the Columbian and Washington manufactories were distributed outside of Philadelphia. Alexandria, Virginia, newspapers had at least two specific advertisements for earthenwares made at the Columbian Pottery, and when the Washington Pottery

was offered for sale, it was noted that the wares had already been bought by merchants who traded in "Virginia, North and South Carolina, Georgia, and New Orleans" (Myers 1980:8).

During the second quarter of the nineteenth century, various industrial potteries were established along the east coast and in Ohio to manufacture the equivalent of English queensware, known by this time as "common-colored" or CC[1] (Barber 1976; Denker and Denker 1985; Gates and Ormerod 1982; Ketchum 1987; Myers 1980). However, the Philadelphia potteries that were established to take advantage of the conditions caused by the Embargo did not prosper after the resumption of trade with England and the subsequent dumping of English manufactured goods into the American market.

An earlier attempt to make queensware in North America was undertaken by John Bartlam near Charleston, South Carolina (South 1997a). His pottery was established in 1765, and by 1771 Bartlam advertised that he was making queensware and china. (The "china," according to South, was possibly white salt-glazed stoneware, or perhaps a poor grade of porcelain made from North Carolina clay.) William Ellis, from Staffordshire, England, worked with Bartlam. Ellis later went on to make queensware and white stoneware with the Moravians in North Carolina.

The "Carolina creamware" made by Bartlam was varied in both form and decoration (South 1997a). Excavations at his kiln sites have recovered wasters of plates and molded hollowwares with designs that mirror contemporary English motifs (cauliflower, melon, and pineapple hollowwares, along with bead and reel, dot diaper/basket, and feather-edge rims on plates). Some of the glazes are colored with metallic oxides that result in tortoiseshell, green, or green and yellow surfaces. Other glazes are uncolored, and these vessels have light to somewhat darker yellow surfaces. At the present time, the extent of the distribution of Bartlam's wares, or the vessels made by the Moravians, is not entirely known. Nevertheless, in the opinion of Stanley South, the excavator of the Bartlam sites, the yellow plates found at the McKean/Cochran and Philadelphia sites were not made by Bartlam; they do not resemble his wares in either their forms or their colors (South, personal communication 1997b).

The creamware-like vessels found in Feature 1 were thus probably the products of a Philadelphia potter or potters. Either the Columbian or the Washington pottery, based on their dates of operation and on their advertised claims, might have been the source of these plates. Philadelphia was the dominant city in the regional market, and coarse earthenwares made by Philadelphia potters, or by local potters who worked in the Philadelphia style, have been found at various sites in Delaware and Maryland. Jefferson's Embargo and the War of 1812 provided the opportunity for American potters to try to take the market for refined earthenwares away from English manufacturers. They did not succeed; but some potters, at least in Philadelphia, were apparently able to use established trade patterns to distribute their new products during the period when English goods were scarce.

[1] Today, these vessels are called "whiteware" by archaeologists.

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